Missouri Department of Natural Resources
Air Pollution Control Program
2022 Monitoring Network Plan

September 7, 2022

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Summary of Proposed and Recent Changes

The Missouri Department of Natural Resources (department) operates an extensive network of ambient air monitors. Missouri's Monitoring Network Plan describes the network and discusses proposed and recent changes. The changes are summarized below.

Proposed Changes

1. The department proposes to discontinue lead monitoring at the Fletcher site in 2023 after EPA approves this plan. Reported lead emissions from the nearby Bunker-Fletcher mine are less than 0.5 tons per year (tpy). The Fletcher site has not violated the lead standard since monitoring began in 2010, and the highest three-month average during the last three years (2019-2021) was 0.02 $\mu g/m^3$.

2. The department proposes to discontinue lead monitoring at the Ursuline North site near Herculaneum in 2023 after EPA approves this plan. When the lead smelter in Herculaneum was operating, the Ursuline site served as a background site since it was generally upwind of the facility. The Ursuline North site has not monitored a violation of the lead standard since monitoring began in 2010, and the highest three-month average during the last three years (2019-2021) was 0.01 $\mu g/m^3$.

3. Doe Run plans to discontinue monitoring at the two non-ambient sites in Glover following the U.S. Environmental Protection Agency (EPA) approval on April 27, 2022 of the revisions to the State Implementation Plan (SIP) and Consent Agreement applicable to monitoring in Glover. Lead monitoring in Glover may resume if demolition activity at the Glover facility is resumed.

4. The department will continue to replace aging 1405-DF instruments with 1405-Fs for $PM_{2.5}$ measurement. Initially, the department retrofitted 1405-DFs to 1405-Fs and subsequently procured new 1405-Fs to replace the aging 1405DFs. The department proposes to replace the TEOM-1405-DF at Blair Street with a new TEOM-1405-F for $PM_{2.5}$ measurement (subject to the availability of funds) and, at the same time, retain the Federal Reference Method (FRM) $PM_{2.5}$ sampler already operating at Blair Street as the collocated FRM sampler for the network of TEOM-1405-F samplers. This change will allow for the discontinuation of the FRM $PM_{2.5}$ sampler at Ladue.

5. The department proposes to replace the aging TEOM-1405-DFs at the Forest Park and Blue Ridge I-70 near-road sites with 1405-Fs for $PM_{2.5}$ measurement (subject to the availability of funds) and subsequently discontinue measuring $PM_{10\text{-}LC}$ and $PM_{10\text{-}2.5}$ at these two sites. The department is not required to monitor $PM_{10\text{-}LC}$ and $PM_{10\text{-}2.5}$ measurements at near-road sites. 40 C.F.R. § 58 Appendix D, 4.8 requires monitoring for $PM_{10\text{-}2.5}$ at the National Core (NCore) sites only.

Changes since the 2021 Monitoring Network Plan

1. Doe Run discontinued operation of the non-ambient Church Street site in Herculaneum on April 1, 2022. There is no consent judgment or state implementation plan requirement that requires the continuation of monitoring at Church Street.

2. In April 2022, Doe Run reduced the sampling frequency for the collocated sampler at the City Hall site in Herculaneum from once every three days to once every six days. This reduced collocated sampling frequency still meets the requirements of 40 C.F.R. § 58 Appendix A.

3. The department discontinued lead monitoring at St. Joe State Park at the end of 2021, as proposed in the 2021 Monitoring Network Plan. The department completed the bulk of the remediation activity near the monitoring site in 2014. From 2017 to 2021, the three-month average lead concentration at that site has not exceeded 0.03 micrograms per cubic meter ($\mu g/m^3$).

4. Beginning with measurements made in 2018, the department previously computed time-average concentrations at the Dunklin High School site in Herculaneum using a combination of (every sixth day) state measurement results and (every third day) Doe Run measurements for days when only Doe Run sampled. In 2021, EPA informed the department they did not allow this procedure, because the state and Doe Run are two different Primary Quality Assurance Organizations (PQAO). Subsequently, the department revised data reported to the EPA Air Quality System (AQS) so that lead concentrations measured by the state and by Doe Run at Dunklin High School are not averaged together, but reported separately.

5. The department installed a Teledyne API T640X at the Hillcrest High School site in Springfield in February 2022 as a Special Purpose Monitor (SPM) to continue the evaluation of the instrument in different regions of the state. T640Xs were already operating at the Blair Street, Branch Street and Troost sites.

6. The West Alton site was inoperative from May 2 to 16, and from May 22 to July 16, 2019, because of damage threats from flooding. The department evaluated the days with missing ozone measurement at West Alton based on temperature and ozone concentrations measured at nearby sites. The evaluation revealed that 62 of the 72 missing days were not conducive to ozone concentrations above the level of the standard. EPA Region 7 approved the department's submission of the evaluation. Therefore, West Alton meets the data completeness requirement for 2019 data. However, because of the importance of West Alton as the design value site for the St. Louis area, in 2021, the department constructed an elevated platform at West Alton above the 1993 and 2019 high water levels. The site still meets regulatory probe height requirements.

How to Make Public Comments Concerning this Plan

The department posted Revision 0 of the 2022 Monitoring Network Plan on the web for public review and comment on May 24, 2022. The department accepted comments concerning the plan electronically at cleanair@dnr.mo.gov, or by mail to the following address:

Missouri Department of Natural Resources
Air Pollution Control Program
Air Quality Analysis Section/Air Monitoring Unit
PO Box 176
Jefferson City MO 65102

The department has included all comments received through June 23, 2022, and responses to comments in Appendix 2 of this final version of the plan (Revision 1). Additionally, the department has identified corrections and changes to the plan in Appendix 2. The only changes were a revision of this section and the footer to indicate that this is the final version of the plan and minor corrections in Appendix 1.

Introduction

The department operates an extensive network of ambient air monitors to comply with the Clean Air Act and its amendments. The Ambient Air Quality Monitoring Network for Missouri includes State and Local Air Monitoring Stations (SLAMS), SPMs and an NCore monitoring site consistent with requirements in federal regulation in Title 40, Code of Federal Regulations, Part 58 (40 C.F.R. § 58).

40 C.F.R. § 58.10 requires states to submit an annual monitoring network plan to EPA, including any proposed network changes. In accordance with 40 C.F.R. § 58.10, Missouri must include in the plan a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D and E of 40 C.F.R. § 58, where applicable. All monitors in the Missouri air monitoring network, including those operated by the state and industries under state review, meet the applicable requirements of 40 C.F.R. § 58. Any changes to the SLAMS requires approval by the EPA Regional Administrator.

The plan must contain the following information for each monitoring station in the network; (See Appendix 1 and the body of this document):

1. The AQS site identification number for existing stations
2. The location, including the street address and geographical coordinates, for each monitoring station
3. The sampling and analysis method used for each measured parameter
4. The operating schedule for each monitor
5. Any proposal to remove or move a monitoring station within a period of 18 months following the plan submittal
6. The monitoring objective and spatial scale of representativeness for each monitor

7. The identification of any sites that are or are not suitable for comparison against the annual $PM_{2.5}$ National Ambient Air Quality Standard (NAAQS)
8. The metropolitan statistical area, core-based statistical area (CBSA), combined statistical area or other area represented by the monitor

EPA requires a network assessment every five years. The department completed the most recent network assessment in June 2020.

Network Design

Federal regulation 40 C.F.R. 58 establishes the design criteria for the ambient air monitoring network. The state must design the network to meet three general objectives:

1. Provide air pollution data to the public in a timely manner
2. Support compliance with ambient air quality standards and emissions strategy development
3. Support air pollution research studies

Specific objectives for the monitoring sites are:

1. Determine the highest pollution concentrations in an area
2. Measure typical concentrations in areas of high population density
3. Determine the impact of significant sources or source categories
4. Determine general background levels
5. Determine the extent of regional pollutant transport among populated areas

Minimum site requirements, based on CBSA population, are provided for ozone (O_3), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), airborne particulate matter with aerodynamic diameter equal to or smaller than 10 micrometers (PM_{10}) and airborne particulate matter with aerodynamic diameter equal to or smaller than 2.5 micrometers ($PM_{2.5}$).

40 C.F.R. § 58 Appendix E establishes the specific requirements for monitor/ probe siting to ensure the ambient data represents the stated objectives and spatial scale. The requirements are pollutant/ scale specific. Periodically, department staff visit and evaluate each monitoring site to ensure compliance with the requirements of 40 C.F.R. § 58 Appendix E. Additional details concerning the sites are available in Appendix 1.

Unanticipated Network Modifications

Changes to the monitoring network may occur outside the annual monitoring network planning process due to unforeseen circumstances including, but not limited to, severe weather, natural events, changes in property ownership, changes in federal funding, or changes in funding available from air emission fees from industrial facilities. The department will communicate any changes to the network that result from conditions outside the state's logistical control and not included in the current monitoring network plan to EPA Region 7 staff and identify such changes in the subsequent annual monitoring network plan.

Special Purpose Monitors

A monitor is designated as an SPM consistent with the regulatory definition in 40 C.F.R. § 58.20 (a): "An SPM is defined as any monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor in its annual monitoring network plan and in AQS, and which the agency does not count when showing compliance with the minimum requirements of this subpart for the number and siting of monitors of various types."

SPMs may be established for many different purposes, including but not limited to NAAQS compliance evaluation, air quality research and characterization, air quality investigation and monitoring method evaluation.

The department includes SPMs in the annual monitoring network plan required by 40 C.F.R. § 58.10. The department installs or approves the installation of these monitors consistent with 40 C.F.R. § 58.20 (f). The department removes, or allows the removal of, these monitors following federal guidelines, which are different for SPMs than for SLAMS. There is more description of each SPM later in the document. The Missouri Monitoring Network Description, Appendix 1, specifies SPM sites and SLAMS sites.

Industrial Monitors

Ambient air monitoring sites classified as Industrial, in this document, indicate sites the industrial source or its contractor operates under an approved industrial monitoring Quality Assurance Project Plan (QAPP) and departmental Quality Management Plan (QMP). Department staff conduct quality assurance audits of these monitoring sites consistent with the approved QAPP.

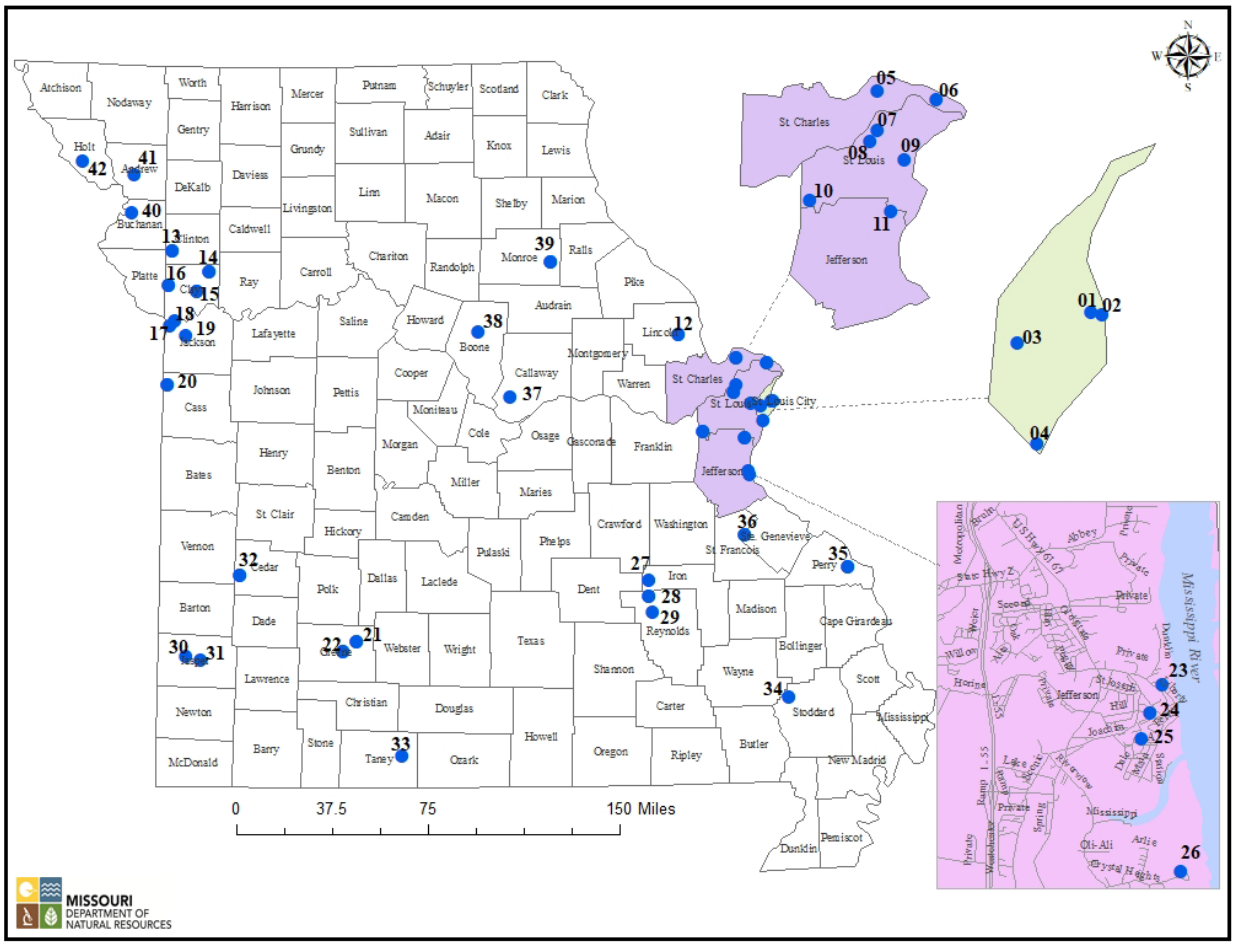
Missouri oversees ambient air monitoring sites operated by industrial sources for NAAQS compliance. The department has incorporated these industrial sites in the annual Monitoring Network Plan and the ambient air monitoring network. Currently, lead and SO_2 industrial sites are in the Missouri monitoring network.

Some industrial lead monitoring sites are classified in the AQS as non-regulatory due to the sites transitioning to non-ambient status. However, the department has required continued monitoring at these locations in agreements with the industrial source for trends analysis or other purposes.

2022 Ambient Air Monitoring Network, State Sites

The 2022 statewide monitoring network is shown in the following map and table.

2022 Missouri State Monitoring Network



Legend (State's Monitoring Network)

St. Louis Area

Site#	Site Name	Parameter Monitored
01	Blair Street^	PM_{10}, $PM_{2.5}$, $PM_{2.5}$(Spec), PMCoarse, PM_{10}-LC, PM_{10}-Pb, O_3, SO_2, NO_2, NO_y, NOx, NO, CO, Carbonyls, PAHs, VOCs, Air Toxics, Carbons, PM_{10} Metals, Prec, WS, WD, OT, IT, SR, BP, RH, PAMS
02	Branch Street	PM_{10}, $PM_{2.5}$, WS, WD, OT, IT, BP, RH
03	Forest Park	$PM_{2.5}$, NO_2, NOx, NO, CO, BC, WS, WD, OT, IT, SR, BP, RH, Prec
04	South Broadway	PM_{10}, $PM_{2.5}$, IT, BP, RH
05	Orchard Farm	O_3, IT
06	West Alton	O_3, WS, WD, OT, IT, SR
07	Rider Trail I-70	NO2, NOx, NO, WS, WD, OT, IT, SR, Prec, BP SO_2 (RES)
08	Maryland Heights	O_3, IT
09	Ladue	$PM_{2.5}$, OT, IT, BP, RH
10	Pacific	O_3, IT
11	Arnold West	PM_{10}, $PM_{2.5}$, $PM_{2.5}$(Spec), IT, O_3, WS, WD OT, IT, BP, RH
12	Foley West*	O_3, IT

Kansas City Area

Site#	Site Name	Parameter Monitored
13	Trimble	O_3, IT
14	Watkins Mill	O_3, IT
15	Liberty	$PM_{2.5}$, O_3, OT, IT, SR, BP, RH
16	Rocky Creek	O_3, IT
17	Troost	$PM_{2.5}$, PM_{10}, SO_2, NO_2, NOx, OT, IT
18	Front Street	PM_{10}
19	Blue Ridge I-70	$PM_{2.5}$, NO_2, NOx, NO, CO, BC, WS, WD, OT, IT, SR, BP, RH, Prec
20	Richards Gebaur-South	$PM_{2.5}$, PM_{10}-LC, O_3, WS, WD, OT, IT, BP, RH

Springfield Area

Site#	Site Name	Parameter Monitored
21	Fellows Lake	O_3, IT
22	Hillcrest High School	O_3, PM_{10}, $PM_{2.5}$, OT, IT, BP, RH

Herculaneum Area

Site#	Site Name	Parameter Monitored
23	Sherman	Pb
24	Dunklin High School	Pb
25	Mott Street	Pb, SO_2
26	Ursuline North+	Pb

New Lead Belt Area

Site#	Site Name	Parameter Monitored
27	Buick NE	Pb, SO_2, WS, WD, IT
28	Oates	Pb
29	Fletcher+	Pb

Outstate Area

Site#	Site Name	Parameter Monitored
30	Alba	O_3, IT
31	Carthage	PM_{10}, WS, WD, IT
32	El Dorado Springs	$PM_{2.5}$, O_3, WS, WD, OT, IT, BP, RH
33	Hercules Glades	$PM_{2.5}$ (Spec)-IMPROVE
34	Mingo	$PM_{2.5}$ (Spec)-IMPROVE
35	Farrar	O_3, IT
36	Bonne Terre	O_3, IT, SR
37	New Bloomfield	O_3, IT
38	Finger Lakes	O_3, IT
39	Mark Twain State Park	PM_{10}, SO_2, NO_2, NOx, NO, O_3, WS, WD, IT
40	St. Joseph Pump Station	PM_{10}, $PM_{2.5}$, PM_{10}-LC, WS, WD, OT, IT, RH
41	Savannah	O_3, IT
42	Forest City, Exide	Pb

*Relocated from former Foley site
^PM_{10}-Pb at Blair is NAAQS excluded
+Proposed to discontinue

Acronyms

PM_{10}	Particulate Matter (Diameter size ≤10 micrometer
$PM_{2.5}$	Particulate Matter (Diameter size ≤2.5 micrometer)
PMCoarse	Particulate Matter (Diameter size between 2.5 and 10 micrometer)
Spec	Speciation
SO_2	Sulfur Dioxide
NO_2	Nitrogen Dioxide
NO	Nitric Oxide
NOy	Reactive Oxides of Nitrogen
NOx	Oxides of Nitrogen
O_3	Ozone
CO	Carbon Monoxide
Pb	Lead (High Volume)
BC	Black Carbon
Prec	Precipitation
WS	Resultant Wind Speed
WD	Resultant Wind Direction
OT	Outside Temperature
IT	Inside Temperature
SR	Solar Radiation
BP	Barometric Pressure
RH	Relative Humidity
IMPROVE	Interagency Monitoring of Protected Visual Environment (Regional Haze)
RES	Research
PAMS	Photochemical Assessment Monitoring Station
PAHs	Polycyclic Aromatic Hydrocarbons

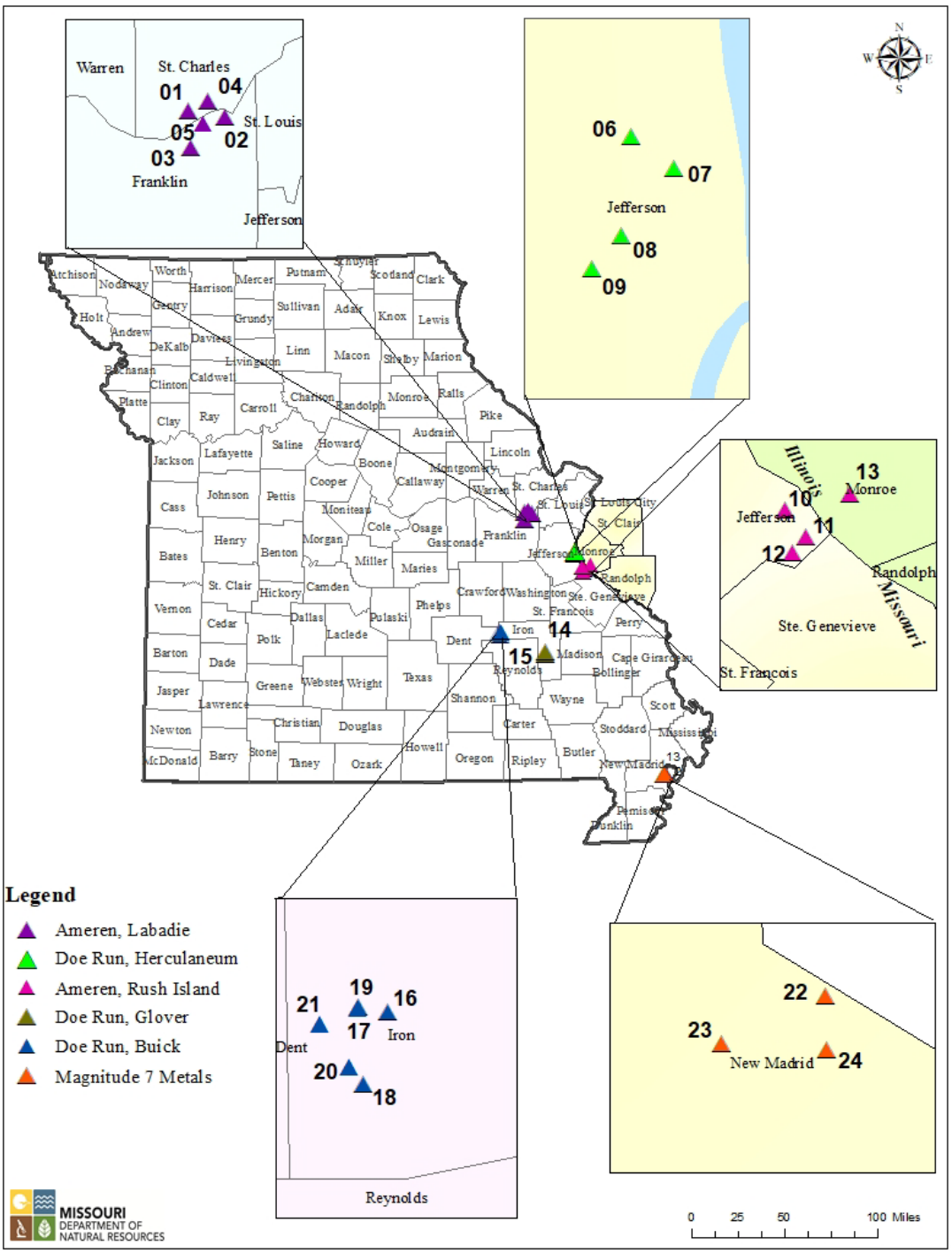
Notes:

1. The acronym $PM_{10\text{-}LC}$ is also commonly referred to as PM_{10c} when collected with a low volume sampler consistent with 40 C.F.R. § 50 Appendix O. $PM_{10\text{-}LC}$ means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers where the concentration is reported at local conditions of ambient temperature and barometric pressure. $PM_{10\text{-}LC}$ is used in this document to describe any continuous or filter based PM_{10} low volume measurement concentration reported at local conditions of ambient temperature and barometric pressure.
2. PM_{10} means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers where the concentration is adjusted to EPA reference conditions of ambient temperature and barometric pressure (25 °C and 760 millimeters of mercury or STP).
3. PMCoarse is also frequently referred to as $PM_{10\text{-}2.5}$.

2022 Ambient Air Monitoring Network, Industrial Sites

Monitoring sites operated by industries are shown in the following map and listed in the following table.

2022 Missouri Industry Monitoring Networks



Legend (Industry Monitoring Network)

Ameren, Labadie Energy Center

Site#	Site Name	Parameter Monitored
01	Northwest	SO_2, (WS, VWS, WD, OT, σ_ϕ, σ_e, RH)^
02	Valley	SO_2, (WS, VWS, WD, OT, SR, BP, RH, Prec, σ_ϕ, σ_e)^
03	Southwest	SO_2
04	North	SO_2
05	Labadie Plant	SODAR (WS, WD, OT, σ_e, σ_ϕ)^

Doe Run, Herculaneum

Site#	Site Name	Parameter Monitored
06	Dunklin	Pb
07	Broadway	(WS, WD, OT, SR, BP, RH, Prec, σ_e)^[a]
08	Mott Street	Pb
09	North Cross	Pb

Ameren, Rush Island Energy Center

Site#	Site Name	Parameter Monitored
10	Weaver-AA	SO_2
11	Johnson Tall Tower	(WS, VWS, WD, OT, σ_ϕ, σ_e)^
12	Natchez	SO_2
13	Fults, IL	SO_2, (WS, VWS, WD, OT, SR, BP, RH, Prec, σ_ϕ, σ_e)^

Doe Run, Glover

Site#	Site Name	Parameter Monitored
14	Post Office #2*+	Pb
15	Big Creek*+	Pb

Doe Run, Buick

Site#	Site Name	Parameter Monitored
16	Buick NE	Pb
17	Buick North#5*	Pb
18	Buick South#1*	Pb, (WS, WD, OT, SR, BP, RH, Prec, σ_e) ^[a]
19	Hwy 32 Northeast	SO_2
20	West Entrance	SO_2
21	County Road 75	SO_2

Magnitude 7 Metals

Site#	Site Name	Parameter Monitored
22	Site #1	SO_2
23	Site #2	SO_2
24	Site #3	SO_2, (WS, WD, OT)

Acronyms

SO_2	Sulfur Dioxide
Pb	Lead (High Volume)
σ_e	Sigma Theta (Standard Deviation of Horizontal Wind Direction
WS	Resultant Wind Speed
WD	Resultant Wind Direction
OT	Outside Temperature
SR	Solar Radiation
BP	Barometer Pressure
RH	Relative Humidity
σ_ϕ	Sigma Theta (Standard Deviation of the Vertical Wind Speed)
Prec	Precipitation
VWS	Vertical Wind Speed

[a]	Metrological Data is not submitted to the EPA Air Quality (AQS) Database
^	Regulatory Dispersion Modeling Grade Parameters
*	Non-Ambient Monitor
+	Proposed to Discontinue

Monitoring Network and Proposed Changes

1. Lead (Pb) Monitoring Network

EPA requires the monitoring of lead sources emitting 0.50 tpy or more. Prior to 2010, EPA required monitoring for sources emitting one tpy or more. All airports in Missouri are exempt from this requirement. A review of current 2020 emission data did not identify any new sources emitting greater than 0.50 tpy. The department will continue to review emission data for new sources in the future.

1.1 Doe Run Operated Sites

Doe Run operates lead monitoring sites in the vicinity of its industrial facilities in Herculaneum, Glover and Boss. The operation of some of these sites is under consent judgments or agreements with the department. Doe Run operates other sites voluntarily.

Doe Run Herculaneum also operates one 10-meter tower meteorological monitoring at the Broadway site as per the language set forth under the 2011 Consent Judgment. Doe Run Herculaneum discontinued the Broad Street 40-meter tower per the Consent Judgment.

Doe Run discontinued operation of the non-ambient Church Street site in Herculaneum on April 1, 2022. There is no consent judgment or SIP requiring the continuation of monitoring at Church Street. At the same time, Doe Run reduced the sampling frequency for the collocated sampler at the City Hall site in Herculaneum from once every three days to once every six days. This reduced collocated sampling frequency continues to meet the requirements of 40 C.F.R. § 58 Appendix A.

Doe Run plans to discontinue monitoring at the two non-ambient sites in Glover following EPA approval on April 27, 2022 of the revisions to the SIP and consent agreement applicable to monitoring in Glover. The Final Rule is effective on May 27, 2022. Lead monitoring in Glover may resume if demolition activity at the Glover facility is resumed.

1.2 State Operated Sites

The department monitored airborne lead concentrations at the St. Joe State Park SPM site during remediation activities involving old lead mining waste in the Federal Mine tailings. The bulk of the remediation activity was completed by early August 2014. The three-month rolling average lead concentration has not exceeded the lead standard, 0.15 $\mu g/m^3$, since the site began monitoring on July 1, 2010. The highest three-month rolling average airborne lead concentration at that site was 0.14 $\mu g/m^3$ in July-September 2011. This elevated lead concentration was attributable to remediation activities near the monitor. From 2017 to 2021, the three-month average lead concentration has not exceeded 0.03 $\mu g/m^3$. Because remediation activities in St. Joe State Park are now complete, and the site has not monitored an exceedance of the lead standard, the department discontinued monitoring at St. Joe State Park at the end of 2021, as proposed in the 2021 Monitoring Network Plan, which was approved by EPA.

The department proposes to discontinue lead monitoring at the Fletcher site located in Reynolds County in 2023 after EPA approves this plan. Reported lead emissions from the nearby Bunker-Fletcher mine are less than 0.5 tpy. The Fletcher site has not violated the lead standard since monitoring began in 2010, and the highest three-month average during the last three years (2019-2021) was 0.02 $\mu g/m^3$.

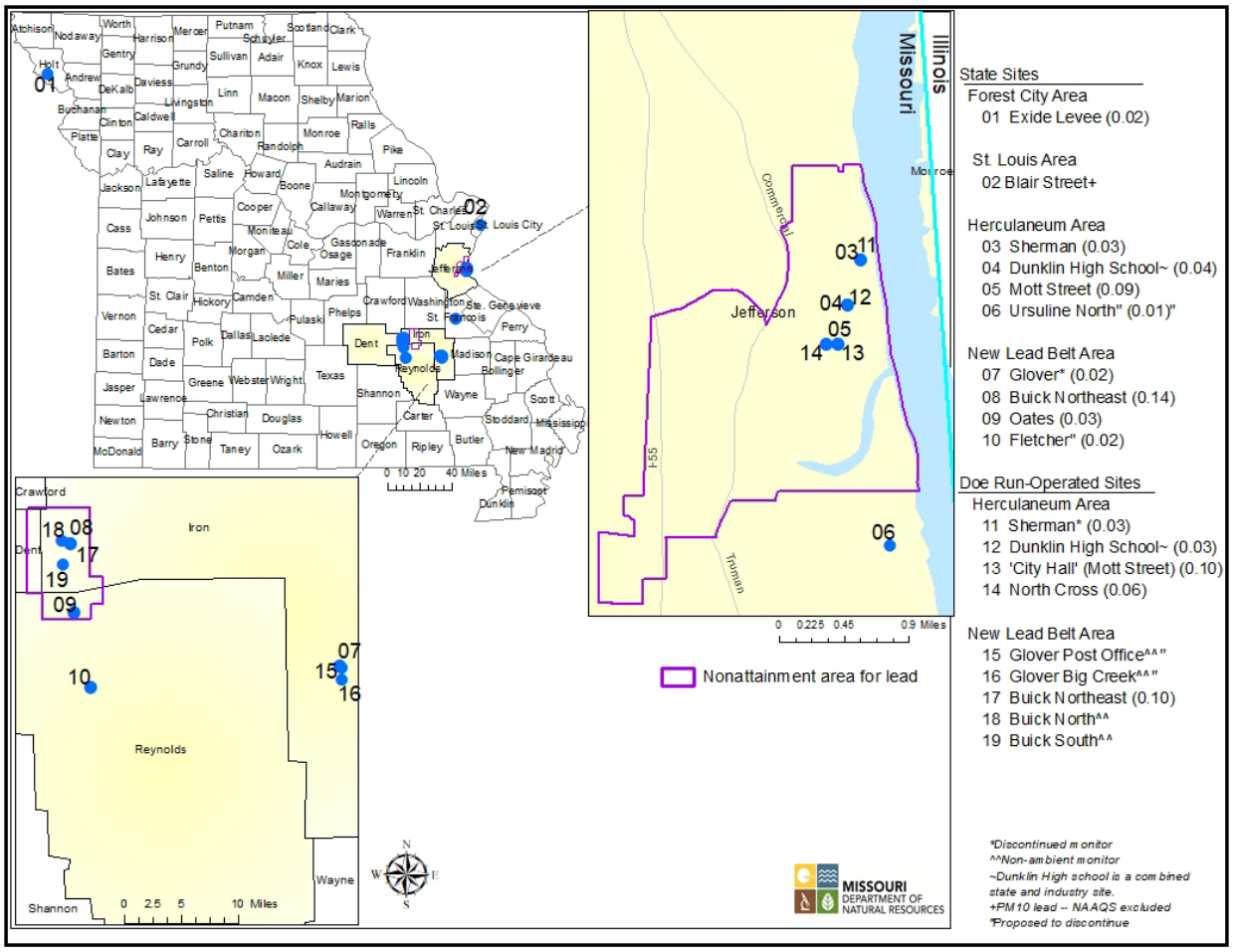
The department proposes to discontinue lead monitoring at the Ursuline North site near Herculaneum in 2023 after EPA approves this plan. When the lead smelter in Herculaneum was operating, the Ursuline North monitor served as a background site, due to its location, generally upwind of the facility in Herculaneum. The Ursuline North site has not monitored a violation of the lead standard since monitoring began in 2010, and the highest three-month average during the last three years (2019-2021) was 0.01 $\mu g/m^3$.

The department monitors airborne lead at the Dunklin High School site in Herculaneum every sixth day. Doe Run monitors lead at the same site every third day. Beginning with measurements made in 2018, the department previously computed time-average concentrations at that site using a combination of (every sixth day) state measurement results and (every third day) Doe Run measurements. In 2021, EPA informed the department they did not allow this procedure, because the state and Doe Run are two different PQAOs. Subsequently, the department revised data reported to EPA's AQS so that lead concentrations measured by the state and by Doe Run at Dunklin High School are not averaged together but reported separately.

The 2022 lead monitoring network is shown in the following map.

2022 Missouri Lead Monitoring Network*, NAAQS=0.15µg/m^3 (3 month).

(Numbers in parenthesis are 2019-2021 Design Values)



*Monitoring at the Fletcher and Ursuline sites will be discontinued after this plan is approved by EPA. No other changes are proposed in this plan.

2. Sulfur Dioxide (SO_2) Monitoring Network

EPA reviewed the SO_2 standard and announced, in March 2019, the standard would remain at 75 parts per billion (ppb), established in 2010. The *2011 Monitoring Network Plan* identified the minimum network monitoring required by the Population Weighted Emissions Index (PWEI). The department updated the analysis using the most recent population and emission data, 2021 estimated population data from the United States Census Bureau and 2017 National Emission Inventory (NEI) emissions data. The following table summarizes the results. The required numbers of monitoring sites based on the PWEI are two sites in the St. Louis CBSA, and one in the Kansas City CBSA. All other Missouri CBSAs require no monitoring sites. The department and the Illinois Environmental Protection Agency meet this requirement in the St. Louis area with the Blair Street site in Missouri and the East St. Louis site in Illinois, and in the Kansas City area with the Troost site. The SO_2 monitoring network exceeds requirements by including the Wood River site in Illinois, the Herculaneum site in Missouri and the JFK site in Kansas. Communications received from the Illinois Environmental Protection Agency and the Kansas Department of Health and Environment (KDHE) indicate those agencies expect to continue SO_2 monitoring at the sites.

In addition to the minimum network requirements, the department oversees several industrial SO_2 monitoring sites and one additional site. The following sections detail this information.

Population Weighted Emission Index (PWEI) Summary

Area	Estimated 2021 Population	2017 SO2 Emissions (tpy)	PWEI	Required Number of SO2 Monitors
Kansas City	2,199,490	9,703.06	21,342	1
St. Louis	2,809,299	67,179.86	188,728	2
Fayetteville-Springdale-Rogers	584,092	2,450.66	1,431	0
Springfield	481,483	3,477.18	1,674	0
Joplin	182,541	1,244.75	227	0
Columbia	185,840	1,560.22	290	0
Jefferson City	150,706	773.09	117	0
St. Joseph	120,424	561.49	68	0
Cape Girardeau	97,699	714.96	70	0
Maryville	21,160	165.46	4	0
Warrensburg	54,150	65.01	4	0
Marshall	23,289	58.77	1	0
Sedalia	43,188	195.16	8	0
Branson	87,935	709.18	62	0
Kirksville	29,210	150.29	4	0
Moberly	24,760	16,556.63	410	0
Lebanon	36,133	187.95	7	0
Mexico	24,982	48.62	1	0
Fort Leonard Wood	53,816	128.70	7	0
Rolla	44,937	172.68	8	0
West Plains	39,975	293.39	12	0
Fort Madison-Keokuk	57,351	998.13	57	0
Quincy	74,954	895.05	67	0
Hannibal	38,879	859.58	33	0
Farmington	67,541	168.78	11	0
Poplar Bluff	42,101	179.61	8	0
Sikeston	37,840	4,746.17	180	0
Kennett	27,717	42.02	1	0

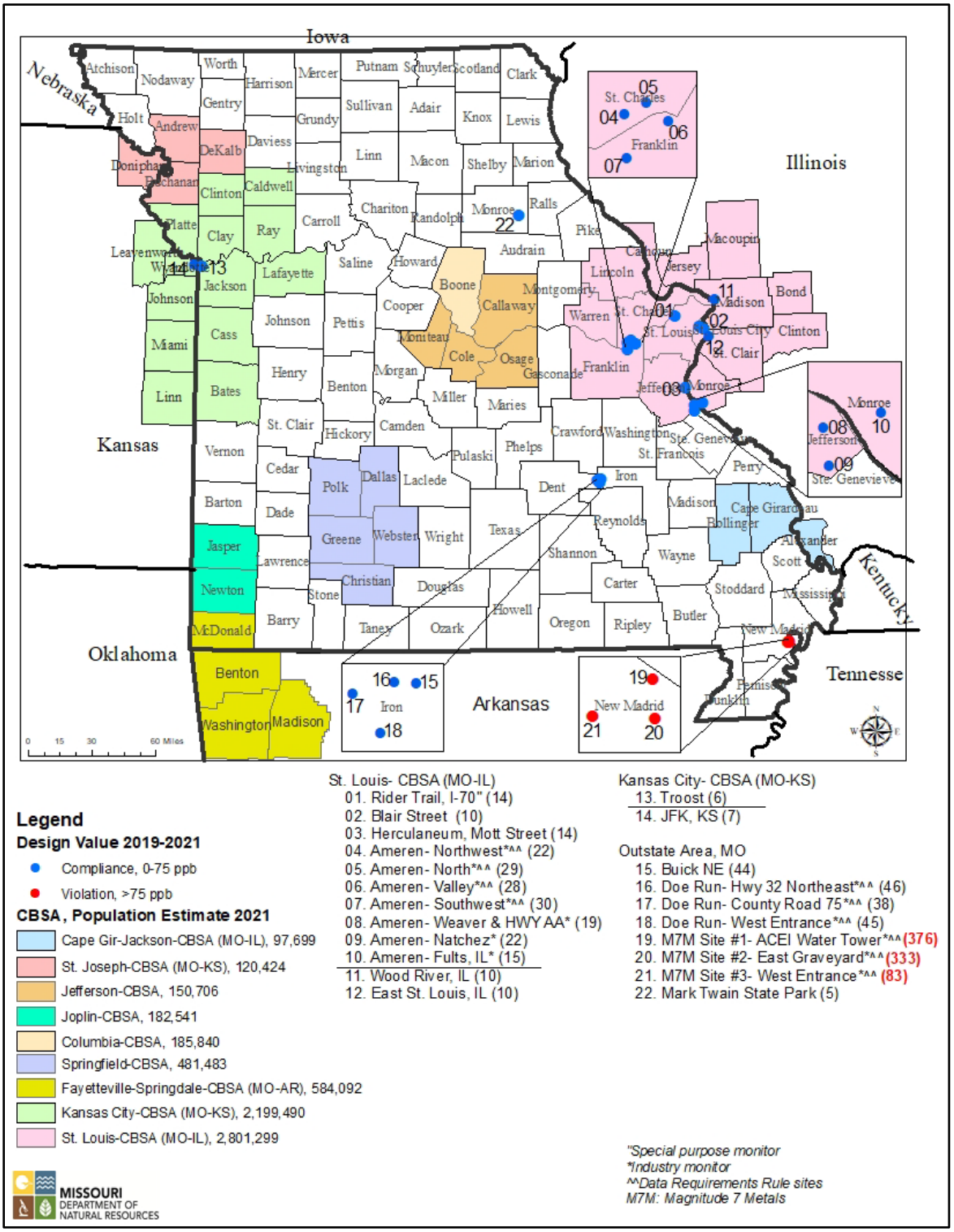
PWEI=population*SO2(tpy)/1,000,000

PWEI $\geq$ 1,000,000: 3 monitors
1,000,000 > PWEI $\geq$ 100,000: 2 monitors
100,000 > PWEI $\geq$ 5,000: 1 monitor

SO2 totals from 7/2017 spreadsheet including fire emissions

The department's 2022 SO_2 monitoring network is shown in the following map.

2022 Missouri Sulfur Dioxide (SO_2) Monitoring Network*, NAAQS=75 ppb (1 hour). (Numbers in Parentheses are 2019-2021 Design Values)



*No changes to the SO_2 network are proposed in this plan.

In 2015, EPA finalized the SO_2 Data Requirements Rule (DRR). This rule required air agencies to characterize air quality, either by monitoring or modeling, around sources that emit 2,000 tpy or more of SO_2.

Sources monitoring due to the DRR include Ameren Labadie Energy Center, Magnitude 7 Metals (formerly Noranda Aluminum) and Doe Run Buick Resource Recycling Facility. In addition, Ameren Rush Island Energy Center is conducting monitoring on an accelerated schedule (compared to the DRR timeline) based on an agreement with the department associated with the Jefferson County nonattainment plan submitted to EPA in May 2015. The following sections include discussions of these sources.

The industrial sources are conducting the SO_2 monitoring in accordance with the SLAMS requirements in 40 C.F.R. § 58. The department reviewed and approved the siting of the monitors based on federal regulations. To meet the requirements of the DRR, the monitors need a minimum of three years of monitoring data, which is now complete. However, the sources cannot discontinue monitoring without EPA approval based on the requirements of 40 C.F.R. § 51.1203(c) (3) or 40 C.F.R. § 58.14.

2.1 Industrial SO_2 and Meteorological Monitoring near the Labadie and Rush Island Energy Centers

Ameren operates two SO_2 ambient air monitoring networks around the Labadie and Rush Island power plants. The department classifies the monitors in the Ameren networks as industrial SO_2 monitors. Sections 2.1.1 and 2.1.2 describe the current status of the Labadie and Rush Island SO_2 monitoring networks.

2.1.1 Labadie Energy Center

Two industrial SO_2 ambient air monitoring sites and a meteorological monitoring station began operation in April 2015, in the area around the Ameren Labadie Energy Center, located at 226 Labadie Power Plant Road in Franklin County. Ameren installed two additional industrial SO_2 monitoring sites southwest and north of the Labadie Energy Center, which began operation on Jan. 1, 2017. In addition, Ameren added meteorological monitoring using a 10-meter tower at the Northwest site. A sound detection and ranging (SODAR) instrument was initially located at the Valley site, relocated to the Northwest site in February 2017, and relocated again to the Labadie plant site in August 2017. Ameren operates these monitoring sites (see the following table) under a department-approved QAPP. The 2015 and 2016 monitoring network plans provide a detailed discussion on the modeling results that support the site selection. These monitors have not shown a violation of the NAAQS. EPA proposed redesignation of the area in St. Charles and Franklin counties around this facility from unclassifiable to attainment in September 2020, but the redesignation has not yet been finalized as of this writing (May 2022).

Summary of Labadie Area Industrial Monitoring Stations:
Monitoring Objective: Source Oriented
Spatial Scale of representativeness: Middle Scale (100 square meters [m^2] to 0.5 square kilometer [km^2])
Labadie Northwest -SO_2, 10-Meter Meteorological Station. (Latitude: 38.5818 Longitude: -90.865528)
Labadie Valley -SO_2, 10-Meter Meteorological Station. (Latitude: 38.572522 Longitude: -90.796911)
Labadie Southwest -SO_2, (Latitude: 38.52825 Longitude: -90.86301)
Labadie North -SO_2, (Latitude: 38.59557 Longitude: -90.82864)
Labadie Plant -SODAR, (Latitude: 38.54860 Longitude -90.83750)

2.1.2 Rush Island Energy Center

On March 23, 2015, the department and Ameren entered into a consent agreement (see Appendix 3 of the 2015 Monitoring Network Plan) that included Ameren installing and operating an SO_2 monitoring network around the Rush Island Energy Center under department oversight. The siting of these monitors was consistent with the technical process described in the SO_2 DRR. The Rush Island monitoring network design was based on an evaluation of dispersion modeling, as described in the 2015 and 2016 Monitoring Network Plans. This network began operation in December 2015. These monitors have not shown a violation of the NAAQS.

The department requested in February 2016 that EPA make a clean data determination for the Jefferson County area, and EPA published a clean data determination for the area on Sept. 13, 2017. The department submitted to EPA a redesignation request and maintenance plan in December 2017, followed by a maintenance plan supplement in April 2021. EPA proposed redesignation of the Jefferson County SO_2 nonattainment area to attainment of the 2010 SO_2 standard on June 29, 2021 (86 F. R. 34177). In January 2022, EPA published a final rule to approve Missouri's maintenance plan for this area and redesignate it to attainment, effective on Feb. 28, 2022.

Summary of Rush Island area Industrial Monitoring Stations:
Monitoring Objective: Source Oriented
Spatial Scale of representativeness: Middle Scale (100 m^2 to 0.5 km^2)
Weaver-AA -SO_2. (Latitude: 38.144529 Longitude: -90.304726)
Natchez -SO_2, (Latitude: 38.10525 Longitude: -90.29842)
Fults, IL, -SO_2, 10-Meter Meteorological Station (Latitude: 38.15908 Longitude: -90.22728)
Johnson Tall Tower -Meteorological Station Only, anemometers at 62.5 meter (m) and 132.5 m levels (Latitude: 38.11999 Longitude: -90.28214)

2.2 Industrial SO_2 and Meteorological Monitoring near the Doe Run Buick Resource Recycling Facility

The Doe Run Company began SO_2 monitoring at three sites in the area around the Buick Resource Recycling Facility near Boss starting Jan. 1, 2017. Meteorological monitoring is also conducted at the Buick South lead monitoring site, south of the facility. These sites are operated under a department-approved QAPP, which includes performance evaluations (audits) by

department staff. Locations of these ambient SO_2 monitoring sites were determined on the basis of air quality modeling of the impact of facility emissions, as described in the 2016 Monitoring Network Plan. These monitors have not shown a violation of the NAAQS, and EPA announced the designation of Iron County, where this facility is located, as attainment/ unclassifiable in December 2020 (effective April 2021).

Summary of Doe Run Buick area Industrial Monitoring Stations:
Monitoring Objective: Source Oriented
Spatial Scale of representativeness: Middle Scale (100 m^2 to 0.5 km^2)
West Entrance -SO_2. (Latitude: 37.63211 Longitude: -91.13565)
County Road 75 -SO_2, (Latitude: 37.64876 Longitude: -91.14890)
Hwy. 32 Northeast (Former PSD site) -SO_2, (Latitude: 37.65319 Longitude: 91.12795)

2.3 Industrial SO_2 and Meteorological Monitoring near the Magnitude 7 Metals (formerly Noranda Aluminum) Facility

Magnitude 7 Metals (M7M) is conducting SO_2 monitoring at three sites and meteorological monitoring at one in the area around its facility near New Madrid. Monitoring at these sites started in January 2017. M7M operates these sites under a department-approved QAPP, which includes performance evaluations (audits) by department staff. The department determined the locations for these ambient SO_2 monitoring sites based on air quality modeling of the impact of facility emissions. The potential area for meteorological monitoring was based on an analysis by a department meteorologist. The *2016 Monitoring Network Plan* includes descriptions of these evaluations.

Two of the M7M sites are in violation of the NAAQS based on 2017 through 2019 data. In December 2020 (effective April 2021), EPA announced the designation of an area surrounding the facility as a nonattainment area for the SO_2 NAAQS, based on 2017-2019 data. EPA designated the remainder of New Madrid County as attainment/ unclassifiable.

Summary of Magnitude 7 Metals area Industrial Monitoring Stations:
Monitoring Objective: Source Oriented
Spatial Scale of representativeness: Middle Scale (100 m^2 to 0.5 km^2)
Site 1 -SO_2, (Latitude: 36.51361 Longitude: -89.56111)
Site 2 -SO_2, (Latitude: 36.50861 Longitude: -89.56083)
Site 3 -SO_2 and Meteorology, (Latitude: 36.50889 Longitude: -89.57083)

2.4 Rider Trail I-70 Site

The department added an SO_2 monitor, designated as an SPM, to the existing Rider Trail I-70 monitoring site in May 2016 to evaluate SO_2 levels in the general area. Since installing the site, the annual fourth-highest daily one-hour SO_2 concentration has ranged from 12 to 19 ppb.

Since the monitor is in the near-roadway environment and is in an area with several SO_2 sources, the department initially classified the spatial scale of representativeness of the SO_2 measurements as middle-scale. The department may reevaluate this classification if trends in the monitoring

data and other analyses warrant increasing the spatial scale of representativeness. The monitoring objective for this monitor is to measure population exposure.

3. National Air Toxics Trends Stations (NATTS), and Other Non-Criteria Pollutant Special Purpose Monitoring

3.1 National Air Toxics Trends Stations Monitoring

Routine NATTS monitoring will continue at Blair Street as described in the NATTS work plan.

3.2 Black Carbon

Black Carbon is monitored with an aethalometer as part of the NATTS program at Blair Street. Also, as part of the condition of receiving one-time Section 103 grant funds to implement sites for the near-roadway monitoring network, the department will continue to conduct special purpose $PM_{2.5}$ black carbon monitoring at the Forest Park and Blue Ridge I-70 near-roadway NO_2 sites using aethalometers.

4. $PM_{2.5}$ Monitoring Network

4.1 $PM_{2.5}$ SLAMS Network

The minimum monitoring requirement based on population and historic $PM_{2.5}$ measurements (40 C.F.R. § 58 Appendix D) requires three sites in St. Louis (because of $PM_{2.5}$ concentrations measured on the Illinois side) and two in Kansas City. St. Louis meets the requirement with four Missouri sites plus three Illinois sites in the St. Louis CBSA (in addition to the near-road sites). Kansas City meets the requirements with three Missouri sites plus three Kansas sites in the Kansas City CBSA (in addition to the near-road site).

There is one $PM_{2.5}$ monitor in Missouri that is not applicable for comparison to the annual NAAQS. The Branch Street site is a middle-scale site focused on a group of sources in the industrial riverfront area of St. Louis. This site is not representative of a neighborhood or larger spatial scale for $PM_{2.5}$ monitoring. The $PM_{2.5}$ monitors deployed to collocate with the near-roadway NO_2 monitors are micro-scale monitors, but EPA has indicated in 40 C.F.R. § 58 Appendix D, 4.7.1(c)(2) that "In many situations, monitoring sites that are representative of microscale or middle-scale impacts are not unique and are representative of many similar situations. This can occur along traffic corridors or other locations in a residential district. In this case, one location is representative of a number of small scale sites and is appropriate for evaluation of long-term or chronic effects." EPA may consider these monitors representative of larger areas near roadways and comparable to the annual $PM_{2.5}$ NAAQS consistent with 40 C.F.R. § 58.30.

The Hercules Glades and Mingo Interagency Monitoring of Protected Visual Environments (IMPROVE) sites meet the requirement for regional background $PM_{2.5}$ monitoring. In addition to these sites, the Arnold West and El Dorado Springs sites serve to monitor transport into eastern and western Missouri urban areas, respectively.

TEOM-1405-DFs and TEOM-1405-Fs are the primary FEM reporting instruments in the Missouri network for $PM_{2.5}$ measurement. However, the department does not report data from the PM_{10} FEM channels of the TEOM-1405-DF instruments to AQS.

Network $PM_{2.5}$ 1405-DF FEM/FRM collocation requirements are currently satisfied at the Blair Street NCore site in St. Louis. The following figure shows FRM/FEM comparability statistics (Class III performance criteria of 40 C.F.R. § 53) for the TEOM-1405-DF (EQPM-0609-182) operating at Blair Street. The additive and multiplicative bias meet the Class III performance criteria of 40 C.F.R. § 53.

The department is continuing to replace the 1405-DF instruments with 1405-Fs. Initial replacements were done by retrofits of 1405-DFs to 1405-Fs, and subsequent replacements are being done with new 1405-Fs. This process is expected to be accelerated using one-time American Rescue Plan funds that will be made available through EPA. To date (May 2022) 1405-F instruments are being operated at 10 sites; see the table at the end of this section.

Two TEOM-1405-F instruments are operated at the St. Joseph Pump Station site, one designated as primary, and one as collocated to satisfy the collocation requirement for that FEM method. The TEOM-1405-DF at Blair Street is currently designated as the primary $PM_{2.5}$ instrument at that site. The department proposes to replace it with a new TEOM-1405-F (subject to the availability of funds) and, at the same time, designate the FRM $PM_{2.5}$ sampler already operating at Blair Street as the collocated FRM sampler for the network of TEOM-1405-F samplers. This will allow the department to discontinue the FRM $PM_{2.5}$ sampler at Ladue.

Only NCore sites require $PM_{10-2.5}$ (40 C.F.R. § 58 Appendix D, 4.8). $PM_{10-2.5}$ is currently being reported at the Blair Street NCore site and the Forest Park and Blue Ridge I-70 near-road sites. $PM_{10-2.5}$ is measured at the Blair Street site with the Teledyne API T640X. The department proposes to replace the aging TEOM-1405-DFs at Forest Park and Blue Ridge I-70 with 1405-Fs for $PM_{2.5}$ measurement and discontinue measuring $PM_{10-2.5}$ at these two sites.

The department is operating a Teledyne API T640X instrument at Blair Street and one at Troost as an SPM for PM_{10} measurement and to evaluate this instrument, which measures airborne particulate concentration using light scattering, for possible future use in the $PM_{2.5}$ network. Two T640X instruments operated at Blair Street showed excellent agreement. Therefore, to further evaluate the instrument, the department relocated one of the T640X instruments at Blair Street to the Branch Street site in July 2020 to evaluate its performance in a location with a higher atmospheric particulate concentration. The department also installed an additional T640X instrument at the Hillcrest High School site in Springfield in February 2022 in order to continue evaluation of the instrument in different regions of the state.

The department is also operating a Teledyne API T640, provided by EPA, at the Forest Park site in St. Louis. EPA is using data with a time resolution as short as one minute from that instrument and time-resolved data from the TEOM-1405-DF and meteorological instruments in non-parametric trajectory analysis (NTA), which uses high time resolution $PM_{2.5}$ concentrations, other air quality data, and wind data to help identify source impacts. The department also provides time-resolved data to EPA from the Teledyne API T640X and other instruments at the Troost site in Kansas City.

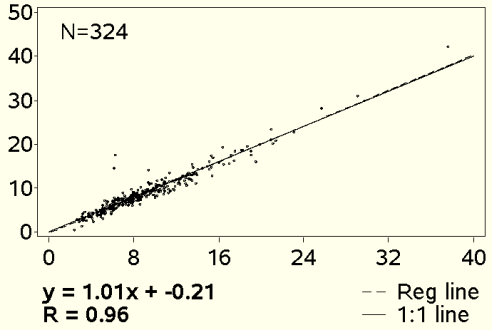
FRM/ FEM Comparability Assessment
Blair Street, St. Louis, 2019-2021
from EPA $PM_{2.5}$ Continuous Monitor Comparability Assessments

$PM_{2.5}$ Continuous Monitor Comparability Assessment

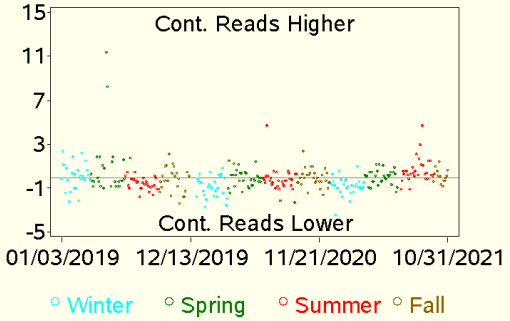
Site 29-510-0085: St. Louis, MO

FRM: R & P Model 2025 PM-2.5 Sequential Air Sampler w/VSCC - Gravimetric (118,145), PM2.5 - Local Conditions (88101), POC=1,2
Cont: Thermo Scientific TEOM 1405-DF Dichotomous FDMS - FDMS Gravimetric (182), PM2.5 - Local Conditions (88101), POC=4

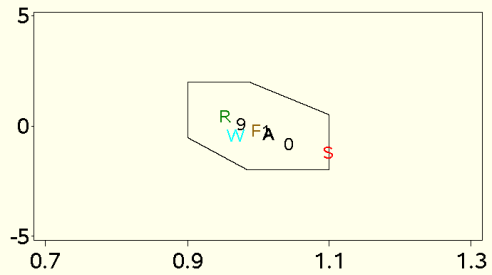
Cont. (y) vs. FRM (x) ($\mu g/m^3$)



Cont. minus FRM ($\mu g/m^3$)

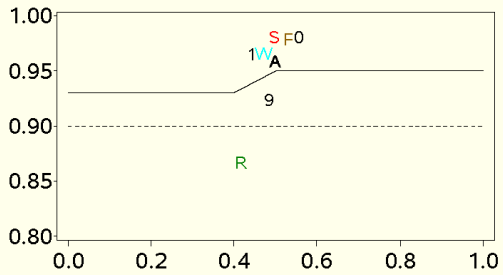


Additive (y) vs. Multiplicative (x) Bias



A=AllData, 9=2019, 0=2020, 1=2021
W=Winter, R=Spring, S=Summer, F=Fall

R (y) vs. FRM CCV (x)



A=AllData, 9=2019, 0=2020, 1=2021
W=Winter, R=Spring, S=Summer, F=Fall

Mean Concentration ($\mu g/m^3$)

Dataset	N	FRM	Cont	Ratio (Cont/FRM)
AllData	**324**	**8.9**	**8.9**	**0.99**
Winter	80	9.2	8.7	0.94
Spring	86	7.5	7.8	1.03
Summer	89	10.3	10.2	1.00
Fall	69	8.7	8.7	0.99
2019	106	9.0	9.0	1.00
2020	120	8.9	8.6	0.97
2021	98	9.0	9.0	1.00

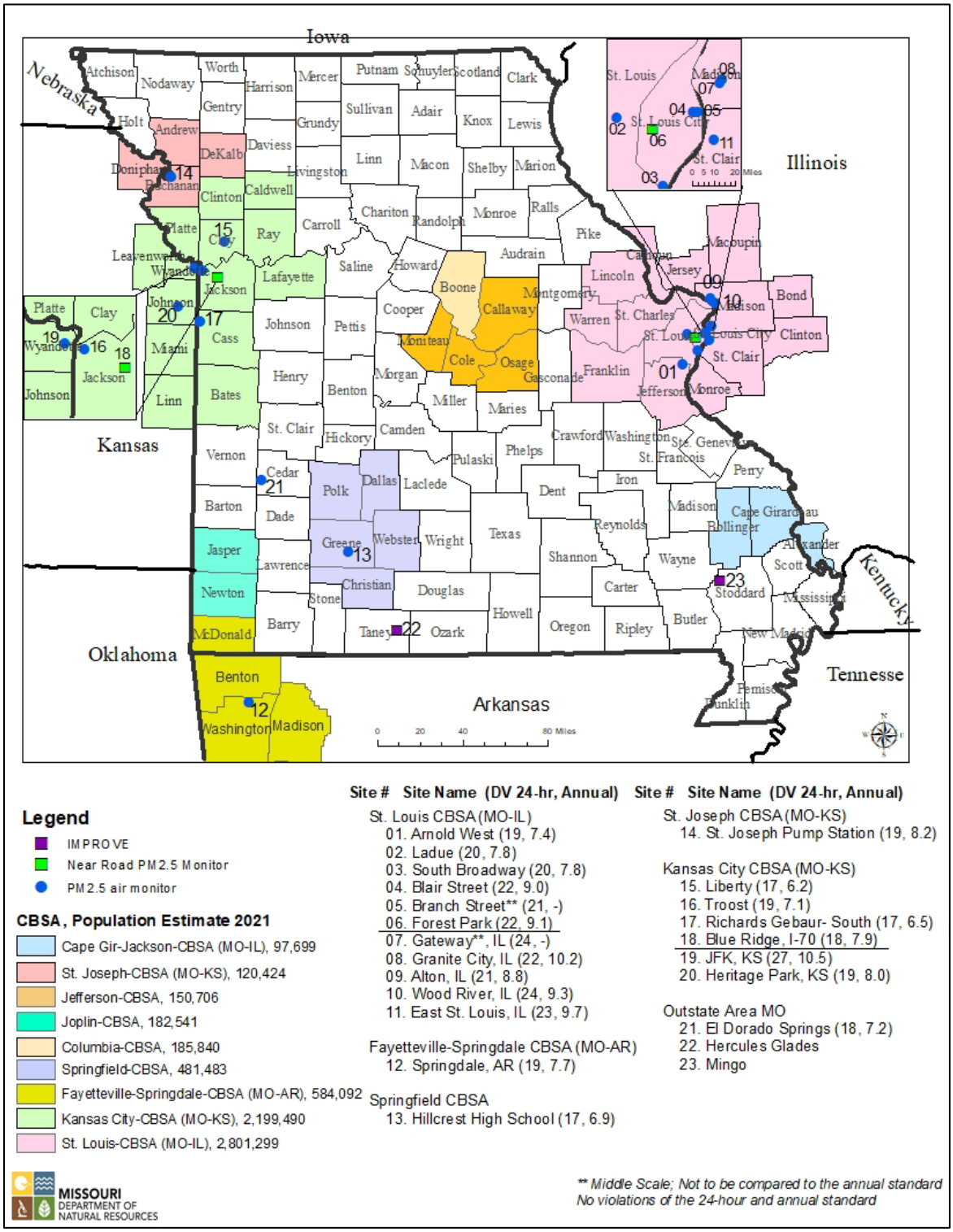
Appendix A Statistics

Dataset	N	Bias (all observations)	N	Bias (only >= 3 ug/m^3)
AllData	**324**	**-1.1**	**312**	**-0.3**
Winter	80	-6.6	78	-5.0
Spring	86	3.9	81	5.0
Summer	89	-1.5	89	-1.5
Fall	69	-0.4	64	0.4
2019	106	1.2	101	2.8
2020	120	-3.8	116	-3.4
2021	98	-0.3	95	0.2

Data Source: EPA AQS Data Mart

Generated: January 25, 2022

2022 Missouri $PM_{2.5}$ Monitoring Network*, NAAQS=35 µg/m³ (24 hours), 12 µg/m³ (Annual). (Numbers in Parentheses are 2019-2021 Design Values for the 24-hour and Annual Standards)



*No changes to the $PM_{2.5}$ network are proposed in this plan other than continuing retrofitting of 1405-DFs to 1405-Fs and discontinuing the FRM sampler at Ladue (see text).

4.2 $PM_{2.5}$ Chemical Speciation Network (CSN)

The department is currently conducting $PM_{2.5}$ speciation sampling at two locations: Blair Street in St. Louis and Arnold West. EPA modified the sampling schedule at Arnold West to every six days in February 2015. The sampling schedule at Blair Street is every three days.

4.3 $PM_{2.5}$ Section 103 Federal Funding

The department is not proposing any changes to the $PM_{2.5}$ monitoring network other than to replace aging equipment and discontinue the FRM sampler at Ladue as described previously. This plan, however, is contingent on EPA providing adequate grant funds to operate and maintain the $PM_{2.5}$ monitoring network.

40 C.F.R. § 58.14 (c) indicates, "State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if any of the following criteria are met and if the requirements of appendix D to this part, if any, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of appendix D to this part if any, continue to be met." If reductions to the network become necessary, the department will provide written communication describing the network changes to the EPA Regional Administrator for review and approval, consistent with 40 C.F.R. § 58.14(b).

2022 Missouri $PM_{2.5}$ Monitoring Network*

Site	Schedule*	Type	Agency	Purpose
St. Louis				
1. Blair Street	3	Collocated FRM	ESP	Ncore and Quality Assurance
	3	Speciation	ESP	Chemical Speciation Network
	H	TEOM-1405-DF FEM	ESP	24 hr & Annual NAAQS/AQI, Ncore, PM10-2.5 continous
	H	T640X PM Mass Monitor FEMs	ESP	Method Performance Evaluation/Research. Not for NAAQS Compliance Determination
2. Branch Street	H	TEOM-1405-F FEM	ESP	24 hr NAAQS/AQI (unique middle scale monitor†)
	H	T640X PM Mass Monitor FEM	ESP	Method Performance Evaluation/Research. Not for NAAQS Compliance Determination
3. Forest Park, I-64 (near-roadway)	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous (micro scale monitor)
4. South Broadway	H	TEOM-1405-F FEM	ESP	24 hr & Annual NAAQS/AQI
5. Ladue	H	TEOM-1405-F FEM	ESP	24 hr & Annual NAAQS/AQI
	6	Collocated FRM	ESP	Quality Assurance
6. Arnold West	6	Speciation	ESP	Chemical Speciation Network
	H	TEOM-1405-F FEM	ESP	24 hr & Annual NAAQS/AQI
Kansas City				
7. Liberty	H	TEOM-1405-F FEM	ESP	24 hr & Annual NAAQS/AQI
8. Troost	H	TEOM-1405-F FEM	ESP	24 hr & Annual NAAQS/AQI
		T640X PM Mass Monitor FEM	ESP	Method Performance Evaluation/Research. Not for NAAQS Compliance Determination
9. Blue Ridge I-70 (near-roadway)	H	TEOM-1405-DF FEM	ESP	24 hr & Annual/AQI, PM10-2.5 continuous (micro scale monitor)
10. Richards-Gebaur South	H	TEOM-1405-F FEM	ESP	24 hr & Annual NAAQS/AQI
Springfield				
11. Hillcrest High School	H	TEOM-1405-F FEM	ESP	24 hr & Annual NAAQS/AQI
	H	T640X PM Mass Monitor FEM	ESP	Method Performance Evaluation/Research. Not for NAAQS Compliance Determination
Outstate				
12. St. Joseph Pump Station	H	TEOM-1405-F FEM	ESP	24 hr & Annual NAAQS/AQI
	H	Collocated TEOM-1405-F FEM	ESP	Quality Assurance
13. El Dorado Springs	H	TEOM-1405-F FEM	ESP	24 hr & Annual/AQI
14. Mingo	3	IMPROVE	Fish & Wildlife Service	Chemical Speciation Network
15. Hercules Glades	3	IMPROVE	Forest Service	Chemical Speciation Network

* 3 = Every third day; 6 = Every sixth day; H = Continuous monitoring, hourly data reported.

† The Branch St. Monitor is a unique middle scale impact site and not eligible for comparison to the Annual $PM_{2.5}$ NAAQS consistent with 40 CFR 58.30.

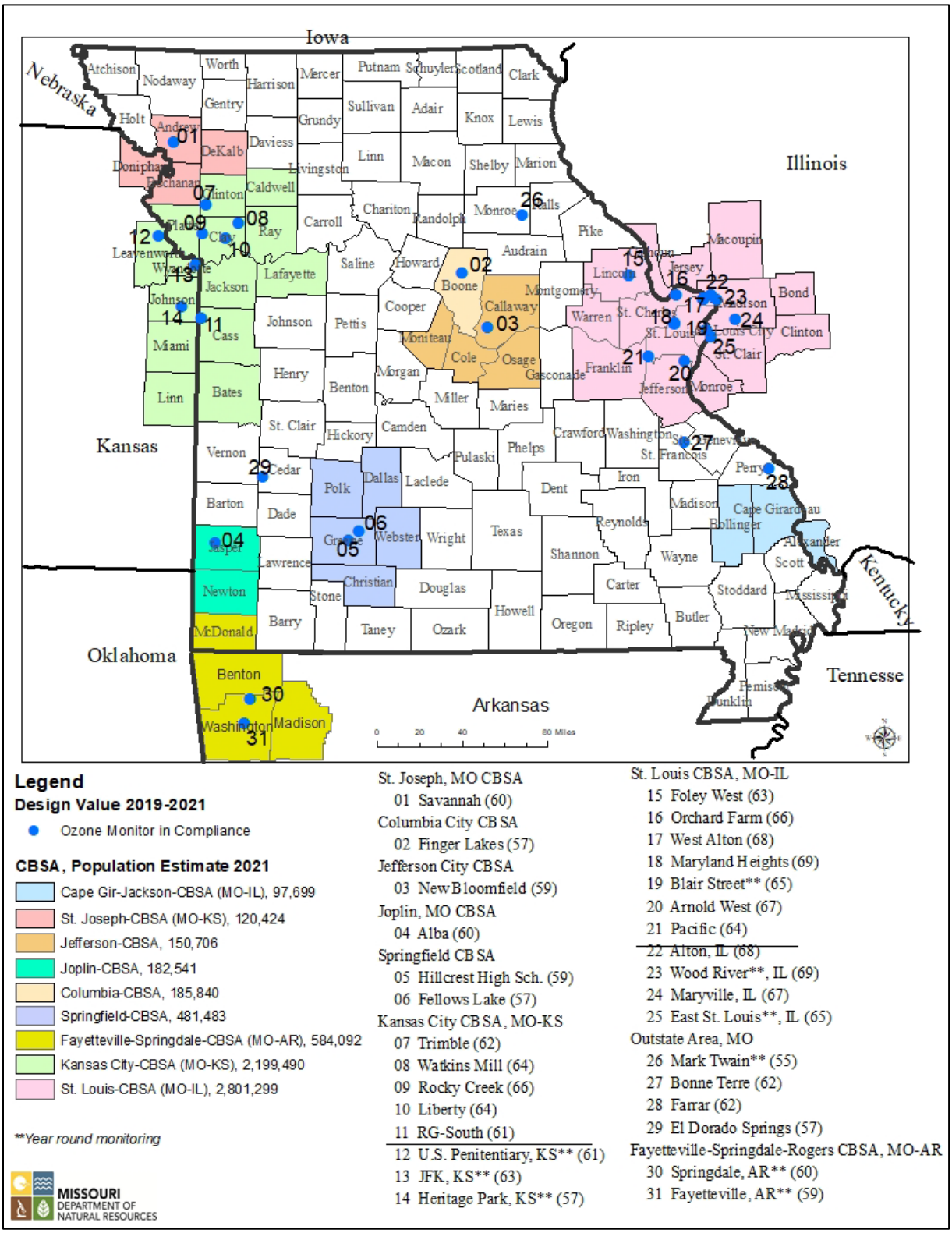
*This plan proposes to replace the 1405-DFs with 1405-Fs at Blair Street, Forest Park, I-64 and Blue Ridge I-70 and discontinue the collocated FRM at Ladue.

5. Ozone Monitoring Network

The department is not planning any changes to the ozone monitoring network. The department completed modifying the West Alton site. Ozone monitoring will continue all year at the Mark Twain State Park (MTSP) site to collect ozone background concentrations needed for Prevention of Significant Deterioration (PSD) modeling projects and at Blair Street to meet the NCore ozone monitoring requirement. The current monitoring network meets the population-based requirements in 40 C.F.R § 58 Appendix D, which requires a minimum of two sites each in the St. Louis, Kansas City and Springfield areas. Ozone monitoring at two sites in Arkansas meets the requirement for the Fayetteville-Springdale-Rogers CBSA since 96% of the population of that CBSA is in Arkansas and only 4% in Missouri.

The West Alton site is approximately 16 miles north of the center of St. Louis between the Missouri and Mississippi rivers and approximately seven miles northwest of their confluence. It is in a relatively flat area, with an elevation of approximately 420 to 430 feet above sea level. This area is subject to flooding caused by the rivers. Widespread flooding occurred in the area during spring and early summer 2019. As a result, the site was inoperative from May 2 to 16 and from May 22 to July 16, 2019. The department evaluated the days with missing ozone measurements at West Alton using temperature and ozone concentrations measured at nearby sites. Based on this evaluation, 62 of the 72 missing days were not conducive to ozone concentrations above the level of the standard. EPA Region 7 approved the department's ozone evaluation submission. Therefore, West Alton continues to meet the data completeness requirement for 2019 data. Because of the importance of West Alton as the design value site for the St. Louis area, the department constructed an elevated platform above the 193 and 2019 high water levels and installed the shelter and instrumentation on the elevated platform in 2021. The site still meets probe height requirements.

2022 Missouri Ozone (O_3) Monitoring Network*, NAAQS=70 ppb (8 hour).
(Numbers in Parentheses are 2019-2021 Design Values)



*No changes to the O_3 network are proposed in this plan.

6. PM_{10} Monitoring Network

The department discontinued collocated FRM PM_{10} monitoring at Blair Street in St. Louis in February 2018. EPA no longer requires the collocation of the manual PM_{10} sampler (40 C.F.R. § 58 Appendix A, 3.3.4). The department designated the continuous PM_{10} from the Teledyne API T640X FEM monitor as primary and discontinued the primary FRM PM_{10} monitor at the site effective July 1, 2019. The Teledyne API T640X also reports PM_{Coarse} for the Blair NCore requirements.

The St. Louis CBSA includes four PM_{10} sites (not including the microscale Forest Park site), enough to meet the minimum monitoring requirement of four to eight sites specified in 40 C.F.R. § 58 Appendix D, 4.6. This monitor count includes the Granite City Fire Station site in Illinois, which the Illinois Environmental Protection Agency expects to continue operating based on the communication with the agency.

The PM_{10} monitors at Front Street in Missouri and JFK in Kansas meet the minimum monitoring requirement of two to four sites in the Kansas City CBSA. KDHE will continue monitoring PM_{10} at the JFK site, as confirmed by correspondence with KDHE staff, because it is an NCore site, as stated in the *2021 Kansas Air Monitoring Network Plan*.

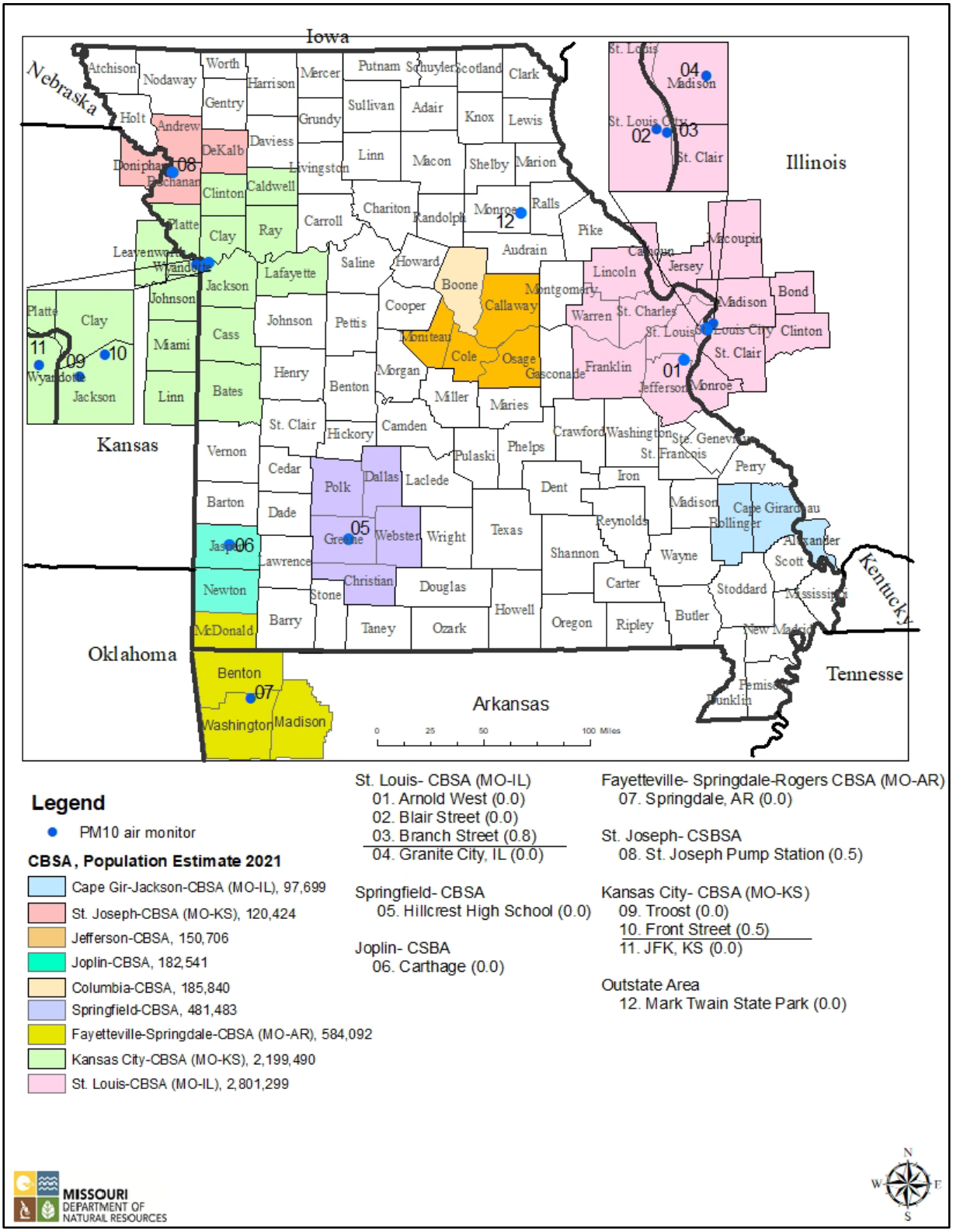
In February 2019, the department began monitoring PM_{10} and $PM_{2.5}$ at Troost in Kansas City with a Teledyne API T640X instrument as an SPM for ongoing evaluation of the performance of that instrument. Similarly, in February 2022, the department began monitoring PM_{10} and $PM_{2.5}$ at Hillcrest High School in Springfield with a Teledyne API T640X instrument as an SPM for ongoing evaluation of the performance of that instrument.

The PM_{10} minimum monitoring requirement in the Springfield CBSA is zero to one, and monitoring at the Hillcrest High School site meets this requirement. The 2021 estimated population of the Springfield CBSA is 481,483. If this population increases to 500,000 or more, the minimum requirement will increase to one to two sites, and the Springfield CBSA will continue to meet the monitoring requirement.

The 2021 estimated population of the Fayetteville-Springdale-Rogers CBSA is 584,092, but only 4% of this population (23,383) is in Missouri. Therefore, establishing a site in the Arkansas area to meet the PM_{10} monitoring requirement for this area is reasonable. Based on correspondence from the Arkansas Department of Environmental Quality (ADEQ), the ADEQ established such a site on Jan. 1, 2017.

The department installed a collocated PM_{10} TEOM-1400ab monitor at the Carthage site in April 2016 and will continue to operate it because of the importance of that site being near a source.

2022 Missouri PM_{10} Monitoring Network*, NAAQS=150 µg/m³ (24 hour).
(Numbers in Parentheses are 2019-2021 Design Values)



*No changes to the PM_{10} network are proposed in this plan.

7. Nitrogen Dioxide (NO_2) Monitoring Network

The 2010 revisions to the NO_2 NAAQS require two near-road NO_2 monitoring sites in the St. Louis CBSA and one in the Kansas City CBSA. The department established the first St. Louis area site in January 2013, the Kansas City area site in July 2013 and the second near-roadway site in the St. Louis area in January 2015.

The first St. Louis area near-roadway site, Forest Park, is adjacent to I-64 west of downtown St. Louis. Air monitoring results at that site are consistent with commuter traffic, heaviest on weekday mornings. The second St. Louis area site, Rider Trail I-70, is adjacent to Interstate 70, just west of Interstate 270. Interstate 70 extends across the United States and carries through traffic in addition to commuter traffic and other local traffic. Therefore, the fleet mix and congestion patterns, relative to time of day and day of the week, are different than at the Forest Park site.

The Troost site in Kansas City meets the requirement for community-wide monitoring in CBSAs with a population larger than 1 million (40 C.F.R. § 58 Appendix D, 4.3.3(a)). Blair Street meets the requirement in St. Louis. Both the Kansas City and St. Louis areas exceed the requirement with monitoring at the JFK site and East St. Louis site, respectively.

40 C.F.R. § 58, Appendix D, 4.3.4 includes the following additional requirement for NO_2 monitoring:

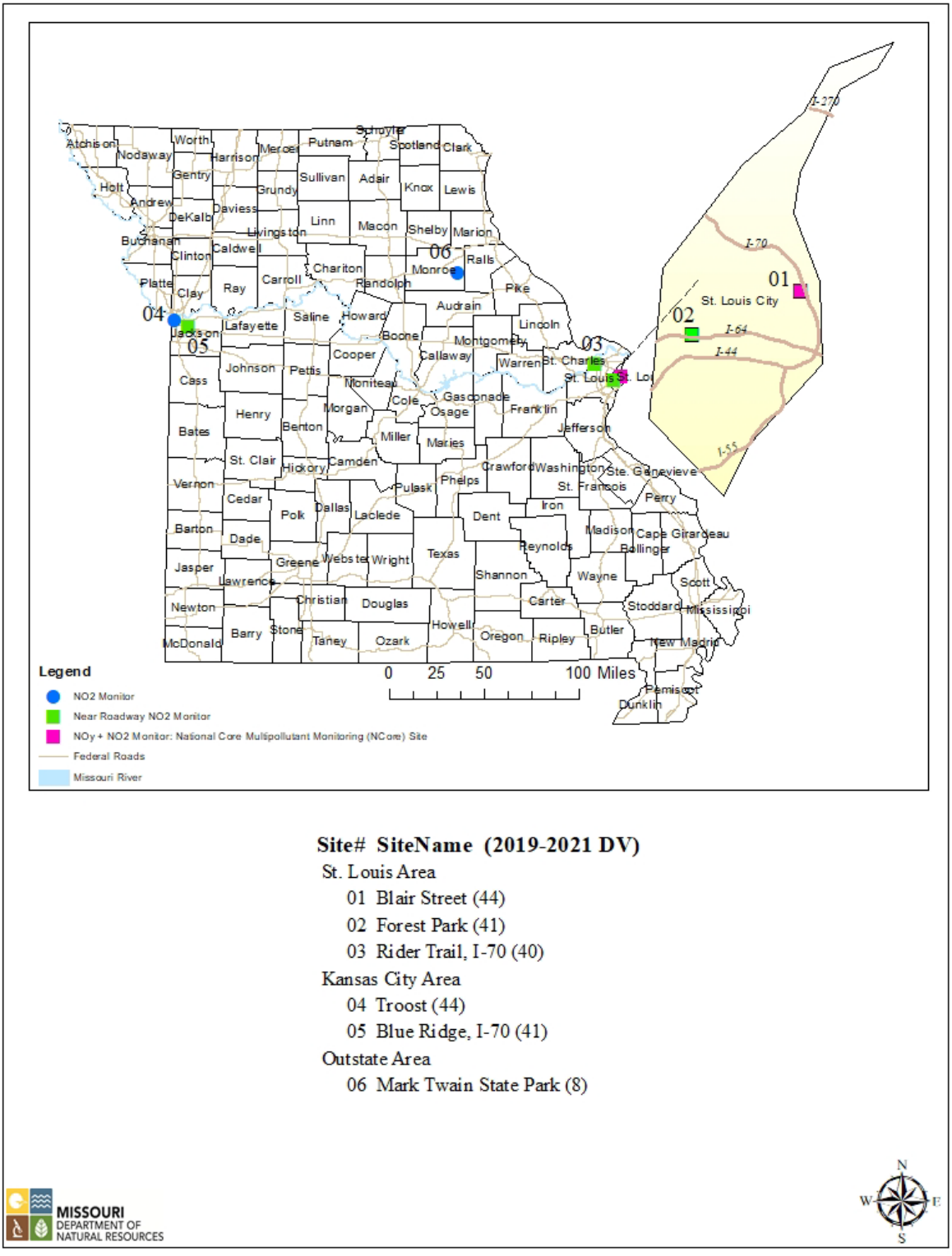
"4.3.4 Regional Administrator Required Monitoring

1. The Regional Administrators, in collaboration with States, must require a minimum of forty additional NO_2 monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations…."

The department discontinued NO_2 monitoring at the Margaretta site at the beginning of 2019 and requested that EPA designate Blair Street as a site located in an area where susceptible and vulnerable populations live, work and play, therefore meeting this requirement.

The department is currently operating a photolytic NO_2 monitor at the Blair Street site. This monitor supplements the required NO_y monitoring at the Blair Street NCore site. The department plans to replace the photolytic NO_2 monitor with a cavity attenuated phase shift CAPS) $NO/NO_2/NO_X$ analyzer in approximately May 2022. Either instrument will satisfy the requirement for True NO_2 monitoring as part of the PAMS program (see Section 9).

2022 Missouri Nitrogen Dioxide (NO_2) Monitoring Network*, NAAQS=100 ppb (1 hour). (Numbers in Parentheses are 2019-2021 Design Values)



Site# SiteName (2019-2021 DV)

St. Louis Area
- 01 Blair Street (44)
- 02 Forest Park (41)
- 03 Rider Trail, I-70 (40)

Kansas City Area
- 04 Troost (44)
- 05 Blue Ridge, I-70 (41)

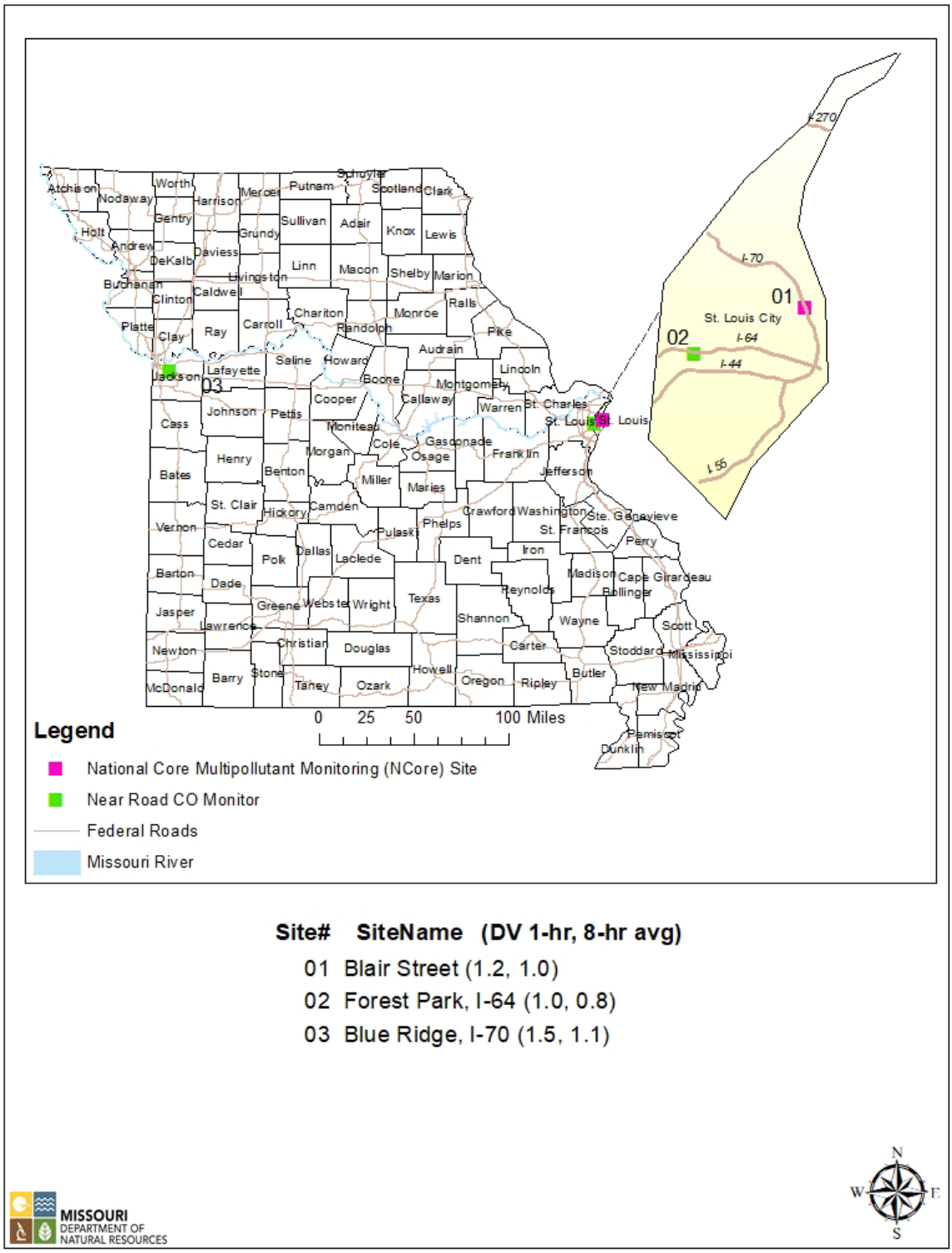
Outstate Area
- 06 Mark Twain State Park (8)

*No changes to the NO_2 network are proposed in this plan.

8. Carbon Monoxide (CO) Monitoring Network

The 2013 NAAQS rule for CO requires near-road CO monitoring at one site in the St. Louis CBSA. The department established CO monitoring sites at the same time as the NO_2 monitoring sites at the Forest Park I-40/64 and Blue Ridge I-70 near-roadway monitoring sites. The department is not proposing any changes to the CO monitoring network in this plan.

2022 Missouri Carbon Monoxide (CO) Monitoring Network*, NAAQS=35 ppm (1 hour), 9 ppm (8 hour). (Numbers in Parentheses are 2019-2021 Design Values for the 1-hour and 8-hour Standards)



Site# SiteName (DV 1-hr, 8-hr avg)

01 Blair Street (1.2, 1.0)

02 Forest Park, I-64 (1.0, 0.8)

03 Blue Ridge, I-70 (1.5, 1.1)

*No changes to the CO network are proposed in this plan.

9. Photochemical Assessment Monitoring Station

In previous versions of the Monitoring Network Plan, this section served as the Photochemical Assessment Monitoring Station (PAMS) Implementation Plan. PAMS monitoring began in June 2021, so that this section now describes an ongoing program.

9.1 Introduction: Regulatory Requirements and Guidance Documents

The "National Ambient Air Quality Standards for Ozone; Final Rule," (*Federal Register*, volume 80, number 206, Oct. 26, 2015), included amendment of 40 C.F.R. § 58, Appendix D (5) to include the following:

> "5. NETWORK DESIGN FOR PHOTOCHEMICAL ASSESSMENT MONITORING STATIONS (PAMS) AND ENHANCED OZONE MONITORING
>
> 1. State and local monitoring agencies are required to collect and report PAMS measurements at each NCore site required under paragraph 3(a) of this appendix located in a CBSA with a population of 1,000,000 or more, based on the latest available census figures.
>
> 2. PAMS measurements will include:
>
> (1) Hourly averaged speciated volatile organic compounds (VOCs);
> (2) Three 8-hour averaged carbonyl samples per day on a 1 in 3 day schedule, or hourly averaged formaldehyde;
> (3) Hourly averaged O_3;
> (4) Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO_2), and total reactive nitrogen (NO_y);
> (5) Hourly averaged ambient temperature;
> (6) Hourly vector-averaged wind direction;
> (7) Hourly vector-averaged wind speed;
> (8) Hourly average atmospheric pressure;
> (9) Hourly averaged relative humidity;
> (10) Hourly precipitation;
> (11) Hourly averaged mixing-height;
> (12) Hourly averaged solar radiation; and
> (13) Hourly averaged ultraviolet radiation…
>
> (g) At a minimum, the monitoring agency shall collect the required PAMS measurements during the months of June, July and August."

The same rule included amendment of 40 C.F.R. § 58.10 (a) (10) to include the following:

> "A plan for making Photochemical Assessment Monitoring Stations (PAMS) measurements, if applicable, in accordance with the requirements of appendix D paragraph 5(a) of this part shall be submitted to the EPA Regional Administrator no later

than July 1, 2018. The plan shall provide for the required PAMS measurements to begin by June 1, 2019."

Primarily because of delays in national procurement of some of the required equipment for PAMS measurement, EPA revised this regulation to change the required start date for PAMS measurement to June 1, 2021 (*Federal Register*, volume 85, number 5, Jan. 8, 2020, page 834).

EPA has published a guidance document entitled *PAMS Required Sites Quality Assurance Implementation Plan [QAIP],* October 2016. The QAIP provides guidance for both EPA and monitoring organizations in implementation of the above-referenced PAMS requirements. The QAIP includes the following recommendations:

> "Monitoring organization PAMS Implementation Plan: The monitoring organization Implementation Plan document will specify how the monitoring organization will perform the measurements for the Required Network. The plan will include details on activities such as monitoring site location, costs and schedule of events, among other information. The plan will also include any waivers to siting or monitoring methods." (page 13).
>
> "Monitoring organizations should have their PAMS waivers and Required Network Implementation Plans finalized by July 2017 and must have them completed by the end of October 2017.[20]
> [20] The regulation requires that monitoring organization Required Network IPs be developed in their Annual Network Plans due July 2018. However, in order to be operational by June 2019, it would be beneficial to have plans finalized by the end of October 2017." (page 21).

EPA has provided additional guidance including a PAMS Technical Assistance Document (TAD), finalized in 2019, and a national QAPP, finalized in 2020, and draft standard operating procedures for PAMS instrument systems. EPA also conducts monthly conference calls to disseminate information and guidance on PAMS monitoring.

Section 9 of the 2018 (and 2019 and 2020) Monitoring Network Plan(s) fulfilled the regulatory requirement in 40 C.F.R. § 58.10 (a) (10) for submittal of a PAMS Implementation Plan by July 2018. The 2017 Monitoring Network Plan included an early version of the plan to meet the recommended schedule in the QAIP for submittal by July 2017 in advance of the regulatory requirement. The department completed and revised a QAPP for the PAMS project based on the national QAPP in 2021 in 2022, respectively.

9.2 PAMS Measurements

The department conducts PAMS monitoring at the Blair Street Station in St. Louis. The Blair Street Station is an NCore site in a CBSA with a population of greater than 1 million. The JFK site in Kansas City, Kansas is also an NCore site and a PAMS site according to the *2021 Kansas Air Monitoring Network Plan*. PAMS monitoring began at Blair Street in 2021. As long as the regulatory requirements are in place and funding is available to support this activity, monitoring

will continue during the months of June, July and August each year. The department will report data from PAMS monitoring to EPA's AQS database except for carbonyl and mixing height data as noted below.

The department has not requested any of the waivers from EPA described in 40 C.F.R. § 58, Appendix D (5) (c) through (f).

Each of the required measurements in 40 C.F.R. § 58, Appendix D (5) (b) is discussed below.

9.2.1. Hourly Averaged Speciated Volatile Organic Compounds (VOCs)

EPA has evaluated several gas chromatographs (GC) designed to measure concentrations of hourly average speciated VOCs. EPA has contracted with two of the vendors of these GC systems to provide instruments to each monitoring organization required to conduct PAMS monitoring. The department selected the Consolidated Analytical Systems (CAS)/Chromatotec AirmOzone Auto-Gas Chromatograph with Flame Ionization Detection. The department received and installed the GC in fall 2020.

The following table lists target compounds for this measurement (carbonyl compounds included in the table are measured in samples described under 9.2.2 below).

9.2.2 Three 8-hour Averaged Carbonyl Samples per Day on a 1 in 3 Day Schedule, or Hourly Averaged Formaldehyde

The department installed and operates a sampler capable of collecting multiple 8-hour samples using derivatized sorbent tubes according to EPA method TO-11A. Analysis of TO-11A samples for the carbonyls listed in the following table (identified by footnote b) is being made available by EPA using its national contract analytical laboratory. The contract laboratory will also enter the carbonyl data into EPA's AQS database.

9.2.3 Hourly Averaged O_3

Hourly averaged ozone is measured at Blair Street as a part of the NCore requirements (see Section 5).

Revised PAMS Target List[a]

From EPA Memorandum, Oct. 2, 2017, "Additional Revisions to the Photochemical Assessment Monitoring Stations Compound Target List"

Existing Priority Compounds	Optional Compounds
1,2,3-Trimethylbenzene	1,3 Butadiene
1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene
1-Butene	1-Pentene
2,2,4-Trimethylpentane	2,2-Dimethylbutane
Acetaldehyde[b]	2,3,4-Trimethylpentane
Benzene	2,3-Dimethylbutane
Cis-2-Butene	2,3-Dimethylpentane
Ethane	2,4-Dimethylpentane
Ethylbenzene	2-Methylheptane
Ethylene	2-Methylhexane
Formaldehyde[b]	2-Methylpentane
Isobutane	3-Methylheptane
Isopentane	3-Methylhexane
Isoprene	3-Methylpentane
M/P Xylene	Acetone
M-Ethyltoluene	Acetylene
N-Butane	Alpha Pinene
N-Hexane	Benzaldehyde[b]
N-Pentane	Beta Pinene
O-Ethyltoluene	Cis-2-Pentene
O-Xylene	Carbon Tetrachloride
P-Ethyltoluene	Cyclohexane
Propane	Cyclopentane
Propylene	Ethanol
Styrene	Isopropylbenzene
Toluene	M-Diethylbenzene
Trans-2-Butene	Methylcyclohexane
	Methylcyclopentane
	N-Decane
	N-Heptane
	N-Nonane
	N-Octane
	N-Propylbenzene
	N-Undecane
	P-Diethylbenzene
	Tetrachloroethylene
	Trans-2-Pentene

[a] This table only includes individual target compounds. Monitoring agencies should continue measuring and reporting total non-methane organic compounds (TNMOC)

[b] These compounds are carbonyls and are measured using Method TO-11a

9.2.4 Hourly Averaged Nitrogen Oxide (NO), True Nitrogen Dioxide (NO_2) and Total Reactive Nitrogen (NO_y)

NO and NO_y are measured at Blair Street as a part of the NCore requirements and will continue. Currently, the department is measuring true NO_2 at Blair Street using an analyzer with a photolytic NO_2 converter. The department plans to replace this instrument in May 2022 with a cavity attenuated phase shift spectroscopy (CAPS) $NO/NO_2/NO_X$ analyzer designated as FEM that will provide NO and NOx in addition to the true NO_2 measurement.

9.2.5-9.2.10 Hourly Averaged Ambient Temperature, Hourly Vector-Averaged Wind Direction, Hourly Vector-Averaged Wind Speed, Hourly Averaged Atmospheric Pressure, Hourly Averaged Relative Humidity, and Hourly Precipitation

The department will continue to measure temperature, wind direction, wind speed, atmospheric pressure, and relative humidity at Blair Street. The department has also installed an instrument for precipitation measurement at the site.

9.2.11 Hourly Averaged Mixing Height

EPA provided funding for the procurement of a ceilometer, which is an instrument that uses a laser to measure mixing height. The department has installed and begun operation of a Vaisala CL-51 ceilometer. The department plans to transfer data from the ceilometer to a national network at the University of Maryland, Baltimore County (UMBC) that is processing ceilometer data. UMBC will input mixing height data into EPA's AQS database.

9.2.12 Hourly Averaged Solar Radiation

Solar radiation was already measured at Blair Street and will continue.

9.2.13 Hourly Averaged Ultraviolet Radiation

The department has installed and begun the operation of an ultraviolet radiation measurement instrument.

Network Description/ Components

See Appendix 1 for the Network Description, which includes the following components:

Site Data

All ambient air monitoring sites are recorded in the EPA's AQS database. Site data include:

AQS Site Code

The site code includes a numerical designation for state, county and individual site. The state and county codes are assigned a number based on the alphabetical order of the state or county. Site numbers are assigned sequentially by date established in most counties. St. Louis County sites also have a division for municipality within St. Louis County.

Street Address

The official post office address of the lot where the monitors are located. Because not all sites are located in cities or towns, the street address is occasionally given as the intersection of the nearest streets or highways.

Geographical Coordinates

The coordinate system used by the department is latitude and longitude.

Air Quality Control Region

Air Quality Control Regions (AQCR) are defined by EPA and designate either urban regions, like St. Louis or Kansas City, or rural sections of a state, such as northeast or southwest Missouri.

AQCR	AQCR Name
070	Metropolitan St. Louis
094	Metropolitan Kansas City
137	Northern Missouri
138	Southeast Missouri
139	Southwest Missouri

Core Based Statistical Area

Core Based Statistical Areas (CBSA) are defined by the U.S. Census Bureau.

CBSA Code	CBSA Name
00000	Not in a CBSA
16020	Cape Girardeau-Jackson, Missouri-Illinois
17860	Columbia
22220	Fayetteville-Springdale-Rogers, Arkansas-Missouri
27620	Jefferson City
27900	Joplin
28140	Kansas City, Missouri-Kansas
41140	St. Joseph, Missouri-Kansas
41180	St. Louis, Missouri-Illinois

44180	Springfield

Monitor Data

Each monitor is designed to detect a specific chemical pollutant or group of related pollutants. A site may have one or many monitors and not all sites will have the same monitors. Monitor data include:

Pollutant

The common name of the pollutant. Criteria pollutants are defined by statute in the Clean Air Act.

AQS Pollutant Code

Each pollutant has a unique numerical code. PAMS pollutant codes are listed in the PAMS QAPP.

Pollutant Code	Pollutant
14129	Lead – Local Conditions (LC)
42101	Carbon Monoxide
42401	Sulfur Dioxide
42406	Sulfur Dioxide 5-minute
42600	Reactive Oxides of N (NO_y)
42601	Nitric Oxide
42602	Nitrogen Dioxide
42603	Oxides of Nitrogen
44201	Ozone
61103	Resultant Wind Speed
61104	Resultant Wind Direct
62101	Outdoor Temperature
62107	Indoor Temperature
62201	Relative Humidity
63301	Solar Radiation
64101	Barometric Pressure
68105	Average Ambient Temperature
68108	Sample Barometric Pressure
81102	PM_{10}
88313	Black Carbon-LC
85101	PM_{10} – LC
85129	Lead PM10 LC - FRM/FEM
86101	PMCoarse – LC (FRM Difference)
88101	$PM_{2.5}$ FRM
88500	$PM_{2.5}$ Total Atmospheric
88502	$PM_{2.5}$ AQI/Speciation
88503	$PM_{2.5}$ Reference
61106	Sigma Theta
62106	Temperature Difference
65102	Precipitation

88314	UV Carbon $PM_{2.5}$-Local Condition
85102	Antimony
85103	Arsenic PM_{10} LC
85107	Barium PM_{10} LC
85109	Bromine PM_{10} LC
85110	Cadmium PM_{10} LC
85111	Calcium PM_{10} LC
85112	Chromium PM_{10} LC
85113	Cobalt PM_{10} LC
85114	Copper PM_{10} LC
85126	Iron PM_{10} LC
85128	Lead PM_{10} LC
85132	Manganese PM_{10} LC
85136	Nickel PM_{10} LC
85142	Mercury PM_{10} LC
85154	Selenium PM_{10} LC
85160	Tin PM_{10} LC
85161	Titanium PM_{10} LC
85164	Vanadium PM_{10} LC
85166	Silver PM_{10} LC
85167	Zinc PM_{10} LC
85173	Thallium PM_{10} LC
85180	Potassium PM_{10} LC
88160	Tin PM_{10} LC
	Organic Carbon Chemical Speciation Network Unadjusted
88305	$PM_{2.5}$ LC TOT
88312	Total Carbon $PM_{2.5}$ LC TOT
88316	Optical Elemental Carbon $PM_{2.5}$ LC TOT

Parameter Occurrence Code

The Parameter Occurrence Code (POC) distinguishes between different monitors for the same pollutant, most often collocated monitors used for precision and quality assurance. For $PM_{2.5}$, different parameter occurrence codes are assigned to FRM, collocated FRM, continuous and speciation monitors.

Collocated

Collocated monitors are used for precision and quality assurance activities, and for redundancy for critical pollutants such as ozone.

Sampling Frequency

Sampling frequency varies for each pollutant, depending on the nature of the NAAQS and the technology used in the monitoring method. Most gaseous pollutants, $PM_{2.5}$ and PM_{10} monitors use continuous monitoring FEM methods and are averaged over one hour. Some particulate pollutants are filter-based FRM methods and averaged over one day.

Scale of Representation

Each monitor is intended to represent an area with similar pollutant concentration. The scales range from only a few meters to many kilometers.

- **MIC** **Microscale** - defines the concentration in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
- **MID** **Middle** - defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometers.
- **NBR** **Neighborhood** - defines concentrations within an extended area of a city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers.
- **URB** **Urban** - defines an overall citywide condition with dimensions on the order of 4 to 50 kilometers.
- **REG** **Regional** - defines air quality levels over areas having dimensions of 50 to hundreds of kilometers.

Monitor Type/ Network Affiliation

The monitor's administrative classification is determined by the purpose for the monitor in the agency sampling strategy. Assignment of monitor types “NCORE” and “PAMS” is limited to EPA headquarters and is done only after a complete review and approval for all site or monitor metadata.

Code	Description
IMPROVE	IMPROVE or IMPROVE Protocol
INDEX SITE	(not currently used by Missouri)
INDUSTRIAL	Used to indicate sites operated by an industry Primary Quality Assurance Organization (PQAO)
NATTS	National Air Toxics Trends Station
NEAR ROAD	Near Road monitoring station
NCORE	National Core monitoring station
NON-EPA FEDERAL	(not currently used by Missouri)
NON-REGULATORY	Not used for NAAQS Compliance
PAMS	Photochemical Assessment Monitoring Stations
PROPOSED NCORE	Proposed NCore
QA COLLOCATED	Collocated to Satisfy 40 C.F.R 58 Appendix A
SLAMS	State or Local Air Monitoring Station
SPECIAL PURPOSE	Special Purpose Monitoring Station (SPM or SPMS)
SUPLMNTL SPECIATION	Supplemental Speciation
TRENDS SPECIATION	Trends Speciation
TRIBAL MONITORS	(not currently used by Missouri)
UNOFFICIAL PAMS	(not currently used by Missouri)

State Monitoring Objective

Each monitor has a distinct objective such as providing real-time data for public awareness or use in determining compliance with regulations. The state monitoring objective provides more information about the purpose of the monitoring in addition to the monitor objective required of 40 C.F.R. § 58.10(a)(6).

State Objective Code	Objective
AQI	Public Information
COM	NAAQS Compliance
MET	Meteorological Data
RES	Research
SIP	State Implementation Plan
SPP	Special Purpose Project
STA	State Standard

Units

The physical terms used to quantify the pollutant concentration, such as parts per million or micrograms per cubic meter.

Unit Code	Unit Description
001	µg/ m^3
007	parts per million
008	parts per billion
011	meters per second
012	miles per hour
013	knots
014	degree, compass
015	degree Fahrenheit
016	millibars
017	degree Celsius
018	Langleys
019	percent humidity
021	inches
022	inches Mercury
025	Langleys per minute
059	Millimeter (Mercury)
073	Liters/ minute STP-Flow
077	Micrograms
079	Watts/ m^2
083	Cubic meter/minute
105	µg/ m^3 LC
106	Minutes
107	Percent
118	Liters/minute LC-Flow
119	Cubic meters/minute LC-Flow
121	parts per trillion

Monitoring/ Analytical Method

Each monitor relies on a scientific principle to determine the pollutant concentration, which is described by the sampling method. Each method code is specific for a particular pollutant; therefore a three numeral code may be used for different methods for different pollutants. This is required by 40 C.F.R. § 58.10(a)(3).

Monitoring Objective

This is the primary monitoring objective(s) for the monitoring parameter required by 40 C.F.R. § 58.10(a)(6). The monitoring objective is specific to the pollutant. Some sites may have more than one monitoring objective, but the primary objective is listed first.

Appendix 1: Missouri Monitoring Network Description

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Missouri Ambient Air Monitoring Network

MIC	***Microscale***	***Several meters up to about 100 meters***
MID	***Middle***	***100 meters to 0.5 kilometer***
NBR	***Neighborhood***	***0.5 to 4.0 kilometers range***
URB	***Urban***	***4 to 50 kilometers***
REG	***Regional***	***Tens to hundreds of kilometers***
COM	***National Ambient Air Quality Standards (NAAQS) Compliance***	
MET	***Meteorological Data***	
N/A	***Not Applicable***	
NCore	***National Multi-Pollutant Monitoring Stations***	
NON-A	***Non-Ambient Site***	
NON-R	***Non-Regulatory***	
PQAO	***Primary Quality Assurance Organization***	
RES	***Research***	
SLAMS	***State and Local Monitoring Stations***	
SIP	***State Implementation Plan***	
SPEC	***Speciation***	
STA	***State Standard***	
SPM	***Special Purpose Monitoring***	
SPP	***Special Purpose Project***	
Coll	***Collocated monitor. A secondary monitor at a site.***	

Ameren Missouri (PQAO - 1440)

Labadie "Plant" Site — *AQS Site Number* 29-071-9003

~1.5 km south of the Labadie Energy Center, Labadie, MO 63055

Latitude: 38.5486 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.83725 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 680

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (40m)
Std Dev Hz Wind Direction	61106	Industrial	2	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (60m)
Std Dev Hz Wind Direction	61106	Industrial	3	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (80m)
Std Dev Hz Wind Direction	61106	Industrial	4	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (100m)
Std Dev Hz Wind Direction	61106	Industrial	5	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (120m)
Std Dev Hz Wind Direction	61106	Industrial	6	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (140m)
Std Dev Hz Wind Direction	61106	Industrial	7	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (160m)

Std Dev Hz Wind Direction	61106	Industrial	8	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (180m)
Std Dev Hz Wind Direction	61106	Industrial	9	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (200m)
Std Dev Hz Wind Direction	61106	Industrial	10	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (220m)
Std Dev Hz Wind Direction	61106	Industrial	11	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (240m)
Std Dev Hz Wind Direction	61106	Industrial	12	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (260m)
Std Dev Hz Wind Direction	61106	Industrial	13	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (280m)
Std Dev Hz Wind Direction	61106	Industrial	14	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (300m)
Temperature Virtual	62102	Industrial	1	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (40m)
Temperature Virtual	62102	Industrial	2	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (60m)
Temperature Virtual	62102	Industrial	3	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (80m)
Temperature Virtual	62102	Industrial	4	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (100m)

Temperature Virtual	62102	Industrial	5	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (120m)
Temperature Virtual	62102	Industrial	6	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (140m)
Temperature Virtual	62102	Industrial	7	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (160m)
Temperature Virtual	62102	Industrial	8	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (180m)
Temperature Virtual	62102	Industrial	9	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (200m)
Temperature Virtual	62102	Industrial	10	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (220m)
Temperature Virtual	62102	Industrial	11	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (240m)
Temperature Virtual	62102	Industrial	12	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (260m)
Temperature Virtual	62102	Industrial	13	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (280m)
Temperature Virtual	62102	Industrial	14	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (300m)

Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (40m)
Wind Direction - Resultant	61104	Industrial	2	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (60m)
Wind Direction - Resultant	61104	Industrial	3	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (80m)
Wind Direction - Resultant	61104	Industrial	4	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (100m)
Wind Direction - Resultant	61104	Industrial	5	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (120m)
Wind Direction - Resultant	61104	Industrial	6	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (140m)
Wind Direction - Resultant	61104	Industrial	7	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (160m)
Wind Direction - Resultant	61104	Industrial	8	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (180m)
Wind Direction - Resultant	61104	Industrial	9	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (200m)
Wind Direction - Resultant	61104	Industrial	10	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (220m)
Wind Direction - Resultant	61104	Industrial	11	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (240m)

Wind Direction - Resultant	61104	Industrial	12	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (260m)
Wind Direction - Resultant	61104	Industrial	13	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (280m)
Wind Direction - Resultant	61104	Industrial	14	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (300m)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (40m)
Wind Speed - Resultant	61103	Industrial	2	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (60m)
Wind Speed - Resultant	61103	Industrial	3	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (80m)
Wind Speed - Resultant	61103	Industrial	4	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (100m)
Wind Speed - Resultant	61103	Industrial	5	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (120m)
Wind Speed - Resultant	61103	Industrial	6	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (140m)
Wind Speed - Resultant	61103	Industrial	7	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (160m)
Wind Speed - Resultant	61103	Industrial	8	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (180m)

Wind Speed - Resultant	61103	Industrial	9	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (200m)
Wind Speed - Resultant	61103	Industrial	10	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (220m)
Wind Speed - Resultant	61103	Industrial	11	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (240m)
Wind Speed - Resultant	61103	Industrial	12	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (260m)
Wind Speed - Resultant	61103	Industrial	13	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (280m)
Wind Speed - Resultant	61103	Industrial	14	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (300m)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (40m)
WS - Sigma Theta (Vertical)	61110	Industrial	2	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (60m)
WS - Sigma Theta (Vertical)	61110	Industrial	3	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (80m)
WS - Sigma Theta (Vertical)	61110	Industrial	4	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (100m)

WS - Sigma Theta (Vertical)	61110	Industrial	5	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (120m)
WS - Sigma Theta (Vertical)	61110	Industrial	6	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (140m)
WS - Sigma Theta (Vertical)	61110	Industrial	7	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (160m)
WS - Sigma Theta (Vertical)	61110	Industrial	8	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (180m)
WS - Sigma Theta (Vertical)	61110	Industrial	9	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (200m)
WS - Sigma Theta (Vertical)	61110	Industrial	10	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (220m)
WS - Sigma Theta (Vertical)	61110	Industrial	11	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (240m)
WS - Sigma Theta (Vertical)	61110	Industrial	12	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (260m)
WS - Sigma Theta (Vertical)	61110	Industrial	13	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (280m)
WS - Sigma Theta (Vertical)	61110	Industrial	14	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (300m)

Labadie, North

AQS Site Number 29-183-9004

~150 ft. north of Terry Rd and ~200 ft. Kingfisher Ct, Augusta, MO 63332

Latitude: 38.59557 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.82864 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 816

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Labadie, Northwest

AQS Site Number 29-183-9002

Rt. 94, Augusta, MO 63332 near the intersection with Schluersburg Road

Latitude: 38.5818 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.865528 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 550

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)

Relative Humidity	62201	Industrial	1	☐	1	N/A	MET	019	%humidity	061	Met One 083D	Other
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (10m Tower)
Std Dev Vt Wind Direction	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)

Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)

Labadie, Southwest — *AQS Site Number* 29-071-9002

870 Albertina Lane, Labadie, MO 63055

Latitude: 38.52825 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.86301 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 630

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Labadie, Valley Site — *AQS Site Number* 29-071-9001

2901 Labadie Bottom Road, Labadie, MO 63055

Latitude: 38.572522 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.796911 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 525

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	Industrial	1	☐	1	N/A	MET	016	Millbars	015	Instrumental-Barometric Press Transducer	Other

Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)
Precipitation	65102	Industrial	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	Industrial	1	☐	1	N/A	MET	019	%humidity	061	Met One 083D	Other
Solar Radiation	63301	Industrial	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (10m Tower)
Std Dev Vt Wind Direction	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)
Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)

Rush Island, Fults-Site, IL — *AQS Site Number* 17-133-9001

Off Ivy Road, Fults, IL 62244

Latitude: 38.15908 ***AQCR:*** 138 SE Missouri

Longitude: -90.22728 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 446

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Barometric Pressure	64101	Industrial	1	☐	1	N/A	MET	016	Millbars	015	Instrumental-Barometric Press Transducer	Other
Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)
Precipitation	65102	Industrial	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	Industrial	1	☐	1	N/A	MET	019	%humidity	061	Met One 083D	Other
Solar Radiation	63301	Industrial	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (10m Tower)
Std Dev Vt Wind Direction	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)

Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)
Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)

Rush Island, Johnson Tall Tower — AQS Site Number 29-099-9008

600 Johnson Rd., Festus, MO 63028

Latitude: 38.11999 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.28214 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 656

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (62.5m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (132.5m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (132.5m-62.5m Probe Heights)
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (132.5m, 15 min)
Std Dev Hz Wind Direction	61106	Industrial	2	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (132.5m, 60 min)
Std Dev Hz Wind Direction	61106	Industrial	3	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (62.5m, A-15 min)
Std Dev Hz Wind Direction	61106	Industrial	4	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (62.5m, A-60 min)
Std Dev Hz Wind Direction	61106	Industrial	5	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (62.5m, B-15 min)

Std Dev Hz Wind Direction	61106	Industrial	6	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (62.5m, B-60 min)
Std Dev Vt Wind Direction	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (132.5m, 15 min)
Std Dev Vt Wind Direction	61107	Industrial	2	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (132.5m, 60min)
Std Dev Vt Wind Direction	61107	Industrial	3	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m, A-15 min)
Std Dev Vt Wind Direction	61107	Industrial	4	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m, A-60min)
Std Dev Vt Wind Direction	61107	Industrial	5	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m, B-15 min)
Std Dev Vt Wind Direction	61107	Industrial	6	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (62.5m, B-60 min)
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (132.5m Probe Height)
Wind Direction - Resultant	61104	Industrial	2	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (62.5m Probe Height)
Wind Direction - Resultant	61104	Industrial	3	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (62.5m Probe Height)

Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (132.5m Probe Height)
Wind Direction - Scalar	61102	Industrial	2	☐	1	N/A	MET	014	deg	063	Climatronics	Other (62.5m Probe Height)
Wind Direction - Scalar	61102	Industrial	3	☐	1	N/A	MET	014	deg	063	Climatronics	Other (62.5m Probe Height)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (132.5m Probe Height)
Wind Speed - Resultant	61103	Industrial	2	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (62.5m Probe Height)
Wind Speed - Resultant	61103	Industrial	3	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (62.5m Probe Height)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (132.5m Probe Height)
Wind Speed - Scalar	61101	Industrial	2	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (62.5m Probe Height)
Wind Speed - Scalar	61101	Industrial	3	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (62.5m Probe Height)
Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (132.5m Probe Height)

Wind Speed - Vertical	61109	Industrial	2	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (62.5m Probe Height)
Wind Speed - Vertical	61109	Industrial	3	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (62.5m Probe Height)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (132.5m Probe Height)
WS - Sigma Theta (Vertical)	61110	Industrial	2	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)
WS - Sigma Theta (Vertical)	61110	Industrial	3	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (62.5m Probe Height)

Rush Island, Natchez — *AQS Site Number* 29-099-9009

917 Natchez Trace Drive, Bloomsdale, MO 63627

Latitude: 38.10525 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.29842 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 505

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Rush Island, Weaver Road & Highway AA

AQS Site Number 29-099-9007

802 Weaver Road, Festus, MO 63028

Latitude:	38.144972	***AQCR:***	070	Metropolitan St. Louis
Longitude:	-90.304783	***MSA:***	7040	St. Louis, MO-IL
Elevation (ft):	502			

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Doe Run Buick (PQAO - 1290)

County Road 75

AQS Site Number 29-093-9010

98 Iron County Road, Bixby, MO 65439

Latitude: 37.64876 ***AQCR:*** 138 SE Missouri

Longitude: -91.14980 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1365

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Doe Run Buick - Buick NE

AQS Site Number 29-093-9008

346 Power Lane, Bixby West, MO 65439

Latitude: 37.65214 ***AQCR:*** 138 SE Missouri

Longitude: -91.11689 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1423

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/1	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented

Doe Run Buick - North #5 (NON-A)

***AQS Site Number*29-093-0021**

Doe Run Buick - North#5, Buick, MO 65439

Latitude: 37.65178 ***AQCR:*** 138 SE Missouri

Longitude: -91.13094 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1443

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented

Doe Run Buick - South #1 (NON-A)

***AQS Site Number*29-093-0016**

Doe Run Buick - South#1, Buick, MO 65439

Latitude: 37.62400 ***AQCR:*** 138 SE Missouri

Longitude: -91.12827 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1502

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Lead (TSP) - LC FRM/FEM	14129	Industrial	2	☑	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Quality Assurance (Collocation)

Hwy 32 Northeast

***AQS Site Number*29-093-9009**

1582 Highway 32, Bixby, MO 65439

Latitude: 37.65319 ***AQCR:*** 138 SE Missouri

Longitude: -91.12795 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1384

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

West Entrance — *AQS Site Number* 29-093-9011

18594 Hwy KK, Boss, MO 65440

Latitude: 37.63211 ***AQCR:*** 138 SE Missouri

Longitude: -91.13565 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1463

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Doe Run Glover (PQAO - 1290)

Doe Run Glover - Big Creek #5 (NON-A) (Proposed to Disc *AQS Site Number* 29-093-0029

Doe Run Glover - Big Creek #5, Hwy 49 Glover, MO 65439

Latitude: 37.47211 ***AQCR:*** 138 SE Missouri

Longitude: -90.68919 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 836

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented

Doe Run Glover - Post Office #2 (NON-A) (Proposed to Dis *AQS Site Number* 29-093-0027

Doe Run Glover - Post Office #2, Hwy 49 Glover, MO 65439

Latitude: 37.48532 ***AQCR:*** 138 SE Missouri

Longitude: -90.68991 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 831

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
Lead (TSP) - LC FRM/FEM	14129	Industrial	2	☑	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Quality Assurance (Collocation)

Doe Run Herculaneum (PQAO - 1290)

Herculaneum, City Hall (Mott Street) — *AQS Site Number* 29-099-0020

360 Short Street, Herculaneum, MO, 63048

Latitude: 38.263394 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.379667 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 468

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/1	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM	14129	Industrial	2	☑	1/6	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Quality Assurance (Collocation)

Herculaneum, Dunklin High School — *AQS Site Number* 29-099-9002

1 Black cat Dr., Herculaneum, MO, 63048

Latitude: 38.26703 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.37875 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 445

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/3	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented and Population Exposure

Herculaneum, North Cross — *AQS Site Number* 29-099-0023

North Cross, Herculaneum, MO 63048

Latitude: 38.26216 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.38126 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 463

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	Industrial	1	☐	1/3	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Population Exposure

Environmental Services Program (ESP) [PQAO - 0588]

Alba — *AQS Site Number* 29-097-0004

20400 Millwood Rd., Alba, MO 64830

Latitude: 37.2385 ***AQCR:*** 139 SW Missouri

Longitude: -94.42468 ***MSA:*** 3710 Joplin, MO

Elevation (ft): 965

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Arnold West — *AQS Site Number* 29-099-0019

1709 Lonedell Dr., Arnold, MO 63010

Latitude: 38.44862 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.3958 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 639

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Ammonium Ion PM2.5 LC	88301	SLAMS	6	☐	1/6	NBR	RES	105	ug/m^3-LC	812	Met One SASS Nylon	Population Exposure (UC-Davis)

Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
OP CSN_Rev Undj PM2.5 LC TOR	88378	SLAMS	6	☐	1/6	NBR	RES	105	ug/m^3-LC	842	URG 3000N w/Pall Quartz filter & Cyclone Inlet	Population Exposure (UC-Davis)
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 Volatile Channel	88503	SPM	4	☐	1	NBR	AQI	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure

Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Blair Street (PM2.5 method to change from 182 to 181) *AQS Site Number* **29-510-0085**

3247 Blair Street, St. Louis, MO 63107

Latitude: 38.65638 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.19825 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 492

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
1,2,3-trimethylbenzene	45225	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
1,2,4-trimethylbenzene	45208	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
1-butene	43280	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
2,2,4-trimethylpentane	43250	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact

Acetaldehyde	43503	PAMS	1	☐	1	URB	PAMS	078	ppbC	202	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Ammonium Ion PM2.5 LC	88301	SPM	6	☐	1/3	NBR	RES	105	ug/m^3-LC	812	Met One SASS Nylon	
Barometric Pressure	64101	SLAMS	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Benzene	45201	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Black Carbon PM2.5 LC	88313	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Population Exposure
Carbon Monoxide	42101	NCORE	1	☐	1	NBR	COM	007	ppm	554	Gas Filter Corr Thermo Electron 48i TLE	Population Exposure
cis-2-butene	43217	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Ethane	43202	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Ethylbenzene	45203	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact

Ethylene	43203	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Formaldehyde	43502	PAMS	1	☐	1	URB	PAMS	078	ppbC	202	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Indoor Temperature	62107	SLAMS	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other (Large Shelter)
Indoor Temperature	62107	SLAMS	2	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other (Small Shelter)
Isobutane	43214	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Isopentane	43221	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Isoprene	43243	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Lead PM10 LC	85128	SPM	6	☐	1/6	NBR	RES	108	ng/m^3-LC	907	R&P Partisol 2025 Teflon	Population Exposure (ERG)
Lead PM10 LC	85128	SPM	7	☑	1/6	NBR	RES	108	ng/m^3-LC	907	R&P Partisol 2025 Teflon	Population Exposure (ERG)
M&P-xylenes	45109	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact

M-ethyltoluene	45212	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Mixing Layer Height	61301	PAMS	1	☐	1	NBR	MET	058	m	011	Ceilometer	Max precursor emissions impact
N-butane	43212	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
N-hexane	43231	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Nitric Oxide	42601	NCORE	1	☐	1	NBR	COM	008	ppb	699	Teledyne API 200 EU/501	Population Exposure
Nitric Oxide	42601	SLAMS	2	☐	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure
Nitrogen Dioxide	42602	SLAMS	2	☐	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure
N-pentane	43220	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
O-ethyltoluene	45211	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact

OP CSN_Rev Undj PM2.5 LC TOR	88378	SPM	6	☐	1/3	NBR	RES	105	ug/m^3-LC	842	URG 3000N w/Pall Quartz filter & Cyclone Inlet	Highest Concentration (UC-Davis)
Outdoor Temperature	62101	NCORE	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Oxides of Nitrogen	42603	SLAMS	2	☐	1	NBR	COM	008	ppb	200	Teledyne API T200UP Photolytic	Population Exposure
Ozone	44201	NCORE	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	NCORE	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SLAMS	5	☐	1	NBR	COM	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	239	Teledyne API T640x	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	6	☐	1	NBR	RES	001	ug/m^3	239	Teledyne API T640x	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Population Exposure
PM2.5 - LC FRM/FEM	88101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	238	Teledyne API T640x	Population Exposure

PM2.5 Tot Atmospheric	88500	SLAMS	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PM2.5 Volatile Channel	88503	SLAMS	1	☐	1	NBR	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Population Exposure
PMCoarse - LC FRM/FEM	86101	NCORE	6	☐	1	NBR	RES	105	ug/m^3-LC	240	Teledyne API T640x	Population Exposure
PMCoarse - LC FRM/FEM	86101	SLAMS	8	☐	1	NBR	COM	105	ug/m^3-LC	207	FMDS-Gravimetric 1405-DF	Population Exposure
Precipitation	65102	PAMS	1	☐	1	NBR	MET	021	inches	014	Heated Tipping Bucket	Max precursor emissions impact
Propane	45204	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Propylene	43205	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Reactive Oxides of N (NOY)	42600	NCORE	1	☐	1	NBR	COM	008	ppb	699	Teledyne API 200 EU/501	Population Exposure
Relative Humidity	62201	NCORE	1	☐	1	N/A	MET	019	%humidity	014	Instrumental-Hygromer C94 Probe	Other

Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Styrene	45220	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Sulfur Dioxide	42401	NCORE	1	☐	1	NBR	COM	008	ppb	560	Pulsed Flourescent 43i-TLE	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	NCORE	1	☐	1	NBR	COM	008	ppb	560	Pulsed Fluorescent	Population Exposure
Toluene	45202	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Trans-2-butene	43216	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Ultraviolet Radiation	63302	PAMS	1	☐	1	NBR	MET	025	Langleys/ min	011	UV Radiometer (Photometer)	Max precursor emissions impact
UV Carbon PM2.5 LC	88314	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Population Exposure

Wind Direction - Resultant	61104	NCORE	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	NCORE	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Blue Ridge, I-70 (PM2.5 method to change from 182 to 181 *AQS Site Number* **29-095-0042**

4018 Harvard Lane, Kansas City, MO 64133

Latitude: 39.047911 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.450513 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 960

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Black Carbon PM2.5 LC	88313	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Carbon Monoxide	42101	SLAMS	1	☐	1	MIC	COM	007	ppm	554	Gas Filter Corr Thermo Electron 48i TLE	Source Oriented
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented

Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other
Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MIC	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Source Oriented
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
PM2.5 Volatile Channel	88503	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other

Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
UV Carbon PM2.5 LC	88314	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Bonne Terre — *AQS Site Number* 29-186-0005

15797 Highway D, Bonne Terre, MO 63628

Latitude: 37.90084 ***AQCR:*** 138 SE Missouri

Longitude: -90.42388 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 840

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	Regional Transport
Ozone	44201	SLAMS	2	☑	1	REG	COM	007	ppm	047	Ultraviolet Photometric	-
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other

Branch Street — *AQS Site Number* 29-510-0093

100 Branch St., St. Louis, MO 63102

Latitude: 38.65643 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.18977 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 429

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM10 - LC/FEM/NonFEM	85101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	239	Teledyne API T640x	Source Oriented

PM10 - STP FRM/FEM	81102	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	239	Teledyne API T640x	Source Oriented
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MID	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Source Oriented
PM2.5 - LC FRM/FEM	88101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	238	Teledyne API T640x	Source Oriented
PM2.5 Volatile Channel	88503	SPM	4	☐	1	MID	AQI	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Source Oriented
PMCoarse - LC FRM/FEM	86101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	240	Teledyne API T640x	Source Oriented
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Buick NE — AQS Site Number 29-093-0034

346 Power Lane, Bixby West, MO 65439

Latitude: 37.65212 ***AQCR:*** 138 SE Missouri

Longitude: -91.11653 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1423

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM	14129	SLAMS	2	☑	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Quality Assurance (Collocation)
Sulfur Dioxide	42401	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10 meters)

Carthage

AQS Site Number 29-097-0003

530 Juniper, Carthage, MO 64836

Latitude: 37.19822 ***AQCR:*** 139 SW Missouri

Longitude: -94.31702 ***MSA:*** 3710 Joplin, MO

Elevation (ft): 986

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	4	☑	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Quality Assurance (Collocation)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (5.5 meters)

Dunklin High School

AQS Site Number 29-099-0005

1 Black Cat Dr., Herculaneum, MO, 63048

Latitude: 38.26703 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.37875 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 445

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective

Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

El Dorado Springs — *AQS Site Number* 29-039-0001

Highway 97 & Barnes Road, El Dorado Springs, MO 64744

Latitude: 37.70097 ***AQCR:*** 139 SW Missouri

Longitude: -94.03474 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 965

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	Regional Transport
Ozone	44201	SLAMS	2	☑	1	REG	COM	007	ppm	047	Ultraviolet Photometric	-
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	REG	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Regional Transport

PM2.5 Volatile Channel	88503	SPM	4	☐	1	REG	AQI	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Regional Transport
Relative Humidity	62201	SPM	2	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (5.5 meters)

Farrar — *AQS Site Number* 29-157-0001

County Rd. 342, Farrar, MO 63746

Latitude: 37.70264 ***AQCR:*** 138 SE Missouri

Longitude: -89.698640 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 497

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Extreme Downwind
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Fellows Lake — AQS Site Number 29-077-0042

4208 E. Farm Rd. 66, Springfield, MO 65803

Latitude: 37.31912 **AQCR:** 139 SW Missouri

Longitude: -93.20422 **MSA:** 7920 Springfield, MO

Elevation (ft): 1346

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-

Finger Lakes — AQS Site Number 29-019-0011

1505 E. Peabody Road, Columbia, MO 65202

Latitude: 39.07803 **AQCR:** 137 Northern Missouri

Longitude: -92.31632 **MSA:** 1740 Columbia, MO

Elevation (ft): 726

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure

Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Fletcher (Proposed to Discontinue) — *AQS Site Number* 29-179-0002

Forest Rd. 2236, Westfork, MO 64498

Latitude: 37.46889 ***AQCR:*** 138 SE Missouri

Longitude: -91.08847 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1256

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Foley West — *AQS Site Number* 29-113-0004

2100 Highway Y Foley, MO 63347

Latitude: 39.04577 ***AQCR:*** 137 Northern Missouri

Longitude: -90.84927 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 715

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Forest City, Exide Levee

AQS Site Number 29-087-0008

25942 Hwy 111, Forest City, MO 64451

Latitude: 40.027222 ***AQCR:*** 137 Northern Missouri

Longitude: -95.235833 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 904

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Forest Park (PM2.5 method to change from 182 to 181)

AQS Site Number 29-510-0094

5600 Clayton Avenue, St. Louis, MO 63110

Latitude: 38.63114 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.28115 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 551

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Black Carbon PM2.5 LC	88313	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Carbon Monoxide	42101	SLAMS	1	☐	1	MIC	COM	007	ppm	554	Gas Filter Corr Thermo Electron 48i TLE	Source Oriented
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Height)
Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MIC	COM	105	ug/m^3-LC	182	FMDS-Gravimetric 1405-DF	Source Oriented
PM2.5 Tot Atmospheric	88500	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented

PM2.5 Volatile Channel	88503	SPM	1	☐	1	MIC	AQI	105	ug/m^3-LC	790	FDMS-Gravimetric 1405-DF	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
UV Carbon PM2.5 LC	88314	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Front Street — *AQS Site Number* 29-095-0018

1331 N. Jackson, Kansas City, MO 64120

Latitude: 39.13198 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.52137 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 728

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Highest Concentration & Population Exposure

Herculaneum, Mott Street — *AQS Site Number* 29-099-0027

747 Mott St., Herculaneum, MO, 63048

Latitude: 38.263394 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.379667 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 468

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/1	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM	14129	SLAMS	2	☑	1/3	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Quality Assurance (Collocation)

Sulfur Dioxide	42401	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented & Highest Concentration
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented & Highest Concentration
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (5.5 meters)

Herculaneum, Sherman — *AQS Site Number* **29-099-0013**

460 Sherman St., Herculaneum, MO, 63048

Latitude: 38.27170 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.37658 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 462

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Hillcrest High School — *AQS Site Number* **29-077-0036**

3319 N. Grant, Springfield, MO 65803

Latitude: 37.25607 ***AQCR:*** 139 SW Missouri

Longitude: -93.29970 ***MSA:*** 7920 Springfield, MO

Elevation (ft): 1321

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SLAMS	6	☐	1	NBR	RES	105	ug/m^3-LC	239	Teledyne API T640x	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	6	☐	1	NBR	RES	105	ug/m^3-LC	239	Teledyne API T640x	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 - LC FRM/FEM	88101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	238	Teledyne API T640x	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure

Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Ladue (To Discontinue FRM) — *AQS Site Number* **29-189-3001**

73 Hunter Ave., Ladue, MO 63124

Latitude: 38.65028 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.35021 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 511

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM2.5 - LC FRM/FEM	88101	SLAMS	2	☑	1/6	NBR	COM	105	ug/m^3-LC	145	R&P 2025 Sequential w/VSCC	Quality Assurance (Collocation)
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 Volatile Channel	88503	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure

Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Liberty — *AQS Site Number* 29-047-0005

Highway 33 & County Home Rd., Liberty, MO 64068

Latitude: 39.30314 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.37678 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 941

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure

PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other

Mark Twain State Park — *AQS Site Number* 29-137-0001

20057 State Park Office Rd., Stoutsville, MO 65283

Latitude: 39.474906 ***AQCR:*** 137 Northern Missouri

Longitude: -91.78878 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 710

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Nitrogen Dioxide	42602	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Oxides of Nitrogen	42603	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background

Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	General/Background
Ozone	44201	SLAMS	2	☑	1	REG	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - STP FRM/FEM	81102	SPM	3	☐	1	REG	SIP	001	ug/m^3	079	R&P SA246B TEOM	General/Background
Sulfur Dioxide	42401	SPM	1	☐	1	REG	SIP	008	ppb	060	Pulsed Fluorescent	General/Background
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	NBR	COM	008	ppb	060	Pulsed Fluorescent	General/Background
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Maryland Heights *AQS Site Number* **29-189-0014**

13044 Marine Ave., Maryland Heights, MO 63146

Latitude: 38.71085 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.47606 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 607

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

New Bloomfield — *AQS Site Number* 29-027-0002

2625 Meadow Lake View, New Bloomfield, MO, 65063

Latitude: 38.70608 ***AQCR:*** 137 Northern Missouri

Longitude: -92.09308 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 860

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Oates

AQS Site Number 29-179-0034

13155 Highway KK, Boss, MO 65440

Latitude: 37.56485 ***AQCR:*** 138 SE Missouri

Longitude: -91.11423 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 1134

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Orchard Farm

AQS Site Number 29-183-1004

2165 Highway V, St. Charles, MO 63301

Latitude: 38.8994 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.44917 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 441

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
Ozone	44201	SLAMS	2	☑	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-

Pacific

AQS Site Number 29-189-0005

18701 Old Highway 66, Pacific, MO 63069

Latitude: 38.49011 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.70509 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 524

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Richards Gebaur-South

AQS Site Number 29-037-0003

1802 E. 203rd Street, Belton, MO, 64012

Latitude: 38.75961 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.57983 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 1082

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Rider Trail, I-70 — AQS Site Number 29-189-0016

13080 Hollenberg Drive, Bridgeton, MO 63044

Latitude: 38.75264 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.44884 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 515

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Height)

Oxides of Nitrogen	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Sulfur Dioxide	42401	SPM	1	☐	1	MID	SPP	008	ppb	060	Pulsed Fluorescent	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	SPP	008	ppb	060	Pulsed Fluorescent	Population Exposure
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Rocky Creek — AQS Site Number 29-047-0006

2-114 NW 132 St., Kansas City, MO 64165

Latitude: 39.33181 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.58069 **MSA:** 3760 Kansas City, MO-KS

Elevation (ft): 990

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Savannah — AQS Site Number 29-003-0001

11796 Highway 71, Savannah, MO 64485

Latitude: 39.9544 **AQCR:** 137 Northern Missouri

Longitude: -94.849 **MSA:** 7000 St. Joseph, MO

Elevation (ft): 1120

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure

Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

South Broadway — AQS Site Number 29-510-0007

8227 South Broadway, St. Louis, MO 63111

Latitude: 38.5425 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.263611 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 452

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SLAMS	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 Volatile Channel	88503	SPM	4	☐	1	NBR	AQI	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

St. Joseph Pump Station — AQS Site Number 29-021-0005

S. Highway 759, St. Joseph, MO 64501

Latitude: 39.741667 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.858333 ***MSA:*** 7000 St. Joseph, MO

Elevation (ft): 845

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Barometric Pressure	64101	SPM	2	☑	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☑	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure

PM2.5 - LC FRM/FEM	88101	SLAMS	5	☑	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Quality Assurance (Collocation)
PM2.5 Volatile Channel	88503	SPM	1	☐	1	NBR	AQI	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 Volatile Channel	88503	SPM	2	☑	1	NBR	AQI	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Quality Assurance (Collocation)
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Relative Humidity	62201	SPM	2	☑	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (5.5 meters)

Trimble — *AQS Site Number* 29-049-0001

7536 SW. O Highway, Trimble, MO 64492

Latitude: 39.53063 ***AQCR:*** 137 Northern Missouri

Longitude: -94.55594 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 1033

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration
Ozone	44201	SLAMS	2	☑	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Troost — *AQS Site Number* 29-095-0034

724 Troost (Rear), Kansas City, MO 64106

Latitude: 39.10463 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.57040 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 941

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	URB	COM	008	ppb	074	Chemiluminescence	Population Exposure
Nitrogen Dioxide	42602	SLAMS	1	☐	1	URB	COM	008	ppb	074	Chemiluminescence	Population Exposure

Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Oxides of Nitrogen	42603	SPM	1	☐	1	URB	COM	008	ppb	074	Chemiluminescence	Population Exposure
PM10 - LC/FEM/NonFEM	85101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	239	Teledyne API T640x	Population Exposure
PM10 - STP FRM/FEM	81102	SPM	6	☐	1	NBR	RES	001	ug/m^3	239	Teledyne API T640x	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 - LC FRM/FEM	88101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	238	Teledyne API T640x	Population Exposure
PM2.5 Volatile Channel	88503	SPM	4	☐	1	NBR	AQI	105	ug/m^3-LC	181	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Sulfur Dioxide	42401	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Sulfur Dioxide Max 5-min Avg	42406	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Ursuline North (Proposed to Discontinue) — *AQS Site Number* 29-099-0025

210 Glennon Heights Rd., Crystal City, MO 63019

Latitude: 38.243 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.37372 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 578

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Lead (TSP) - LC FRM/FEM	14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Upwind Background

Watkins Mill State Park — *AQS Site Number* 29-047-0003

Watkins Mill Road, Lawson, MO 64062

Latitude: 39.40770 ***AQCR:*** 094 Metropolitan Kansas City

Longitude: -94.26539 ***MSA:*** 3760 Kansas City, MO-KS

Elevation (ft): 1009

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
Ozone	44201	SLAMS	2	☑	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-

West Alton

AQS Site Number 29-183-1002

General Elecric Store, Highway 94, West Alton, MO 63386

Latitude: 38.8725 ***AQCR:*** 070 Metropolitan St. Louis

Longitude: -90.226389 ***MSA:*** 7040 St. Louis, MO-IL

Elevation (ft): 425

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☑	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph		065	Instrumental: RM Young Model 05305	Other (10m Tower)

Magnitude 7 Metals (PQAO - 2368)

Magnitude 7 Metals, Site # 1 AECI Water Tower Location

AQS Site Number 29-143-9001

391 St Jude Industrial Park, New Madrid, MO 63869

Latitude: 36.51364 ***AQCR:*** 138 SE Missouri

Longitude: -89.56093 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 297

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	Industrial	1	☐	1	MID	MET	017	deg C	013	Electronic Averaging	Other
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Magnitude 7 Metals, Site # 2 East Graveyard

AQS Site Number 29-143-9002

391 St Jude Industrial Park, New Madrid, MO 63869

Latitude: 36.50838 ***AQCR:*** 138 SE Missouri

Longitude: -89.56074 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 296

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	Industrial	1	☐	1	MID	MET	017	deg C	013	Electronic Averaging	Other

Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Magnitude 7 Metals, Site # 3 West Entrance *AQS Site Number* **29-143-9003**

391 St Jude Industrial Park, New Madrid, MO 63869

Latitude: 36.50899 ***AQCR:*** 138 SE Missouri

Longitude: -89.57099 ***MSA:*** 0000 Not in a MSA

Elevation (ft): 298

Parameter	*AQS Code*	*AQS Monitor Type*	*AQS POC*	*Coll*	*AQS Freq*	*AQS Scale*	*State-Obj*	*AQS Unit-Code*	*AQS Unit*	*AQS Method Code*	*AQS Method*	*AQS Monitor Objective*
Indoor Temperature	62107	Industrial	1	☐	1	MID	MET	017	deg C	013	Electronic Averaging	Other
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Wind Direction - Resultant	61104	Industrial	1	☐	1	MID	MET	014	deg	065	Instrumental: RM Young Model 05305	Other
Wind Speed - Resultant	61103	Industrial	1	☐	1	MID	MET	011	m/s	065	Instrumental: RM Young Model 05305	Other

Appendix 2: Comments on Proposed 2022 Monitoring Network Plan, Responses to Comments, and Corrections

Comment from City of Springfield

From: Evans, Austin
Sent: Tuesday, May 24, 2022 3:52 PM
To: cleanair <cleanair@dnr.mo.gov>
Subject: comment about springfield iron and metals

I think it would be good to have some air quality monitors just north of the Springfield Iron and Metals plant in Springfield, Missouri. It is a facility that has generated a lot of complaints in the past, although violations are hard to catch since their metal grinding operation occurs in the dark and during the earliest morning hours. There is a neighborhood just to the north that I would say is frequently impacted.

An air monitor that stays in place would really help to determine how often and severe the pollution is.

Thanks,

Austin Evans
Environmental Specialist
Department of Environmental Services
290 E. Central St
Springfield, MO 65802
☎

Response to Comment from City of Springfield

Springfield Iron and Metal is a scrap metal facility in Springfield, Missouri (https://www.springfieldiron.com/). The facility has a permit from the Air Pollution Control Program. In the past, the facility had an issue with explosions when persons would leave propane tanks in the trunks of junked cars. The facility implemented new policies to prevent this issue. Other air quality concerns relate to emissions from cutting torches and steam emitted from the shredder. Torch cutting can generate particulate matter emissions. The shredder operates with friction that causes heat and steam to emanate from the process. The steam can have the appearance of smoke, especially during the night hours when it tends to be closer to the ground. There are also sometimes metal and oily odors associated with the steam, but the odors have never been at a violation level. The department has received and investigated 10 communications of air quality concerns related to the facility between 2009 and 2022 to date, which is not a large number for such a facility. The department's Southwest Regional Office staff inspected the facility in 2020 and 2022. The only unsatisfactory findings in the most recent inspection related to record-keeping required as a permit condition.

Because the most recent inspection did not show a violation of permit conditions on facility operation and the number of air quality concerns is small (less than one per year on average), installation of a permanent air monitoring site close to the facility is not warranted. Oversight of the facility operation by the department's Southwest Regional Office will continue.

Comment from City Utilities of Springfield

From: Daniel Hedrick
Sent: Thursday, June 23, 2022 4:03 PM
To: cleanair <cleanair@dnr.mo.gov>
Subject: City Utilities of Springfield, Missouri Comments to Missouri Department of Natural Resources' Draft 2022 Monitoring Network Plan

City Utilities of Springfield, Missouri fully supports the *draft* 2022 Monitoring Network Plan proposed by the Missouri Department of Natural Resources (MDNR) Air Program. Springfield/Greene County and City Utilities is investing in quality of place and enjoyment for our community of many its amenities like Miller Park at Fellows Lake. Over the past several years, use of Fellows Lake, the marina, and now the bike park (mountain bike trails) has increased and the need for investment to provide safe access for our community has followed. Part of those improvements include a new entrance to Miller Park for both bike and boating patrons. The newly designed entrance and roadway will directly impact the MDNR Fellows Lake air monitoring site (EPA Site ID: 29-077-0042) listed in the Monitoring Network Plan. In order to continue to provide for these new activities, but remain a strong, supportive partner in protecting attainment/maintenance of the current ozone NAAQS for the Springfield/Greene Co. community, City Utilities requests moving the ambient monitoring site to an alternate location within Miller Park.

As a continued integrated planning partner, City Utilities provides the following input as an alternate site location:

- Movement of the monitoring location westward at or near current elevation.
- Electric supply to shelter can be modified to new location.
- Location chosen can be secured to allow for maximum setback limits from trees and roadways.
- Addresses relocation that does not disrupt design value data historically collected and attainment demonstration achieved over the past 16 years.
- Hold off construction of the new entrance/access roadway until after current ozone season. However, any leeway between late September and the end of October would be welcomed.

Provided in the Figure below, is a snapshot of the current location and the proposed alternate site for the Air Program to consider. City Utilities is available for further consultation and ready to assist the MDNR in making this transition at the MDNR's earliest convenience.

Figure 1: Snapshot of existing location and proposed alternate site with 5 ft contours depicted.

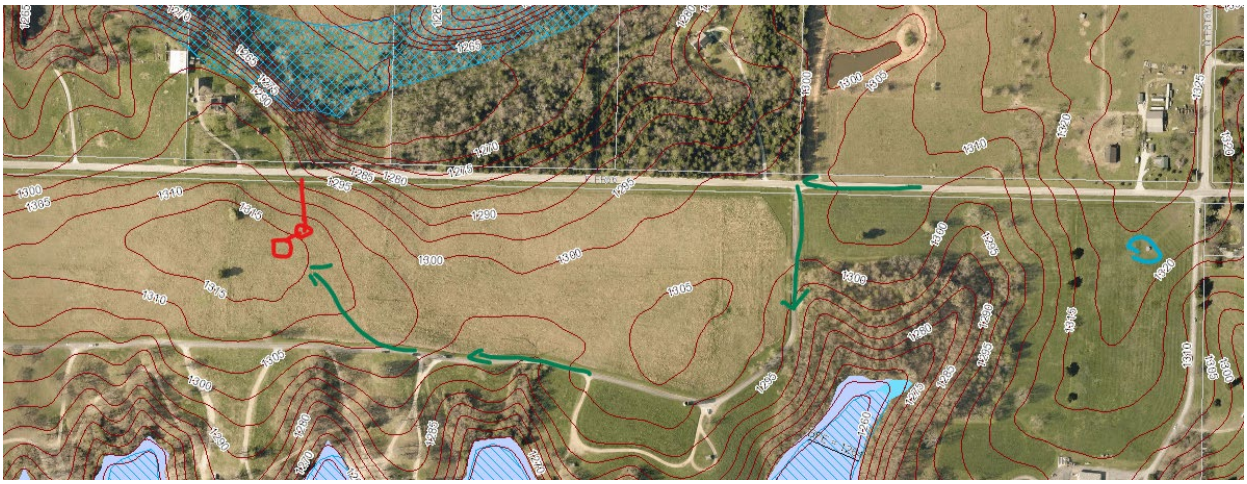


Figure 2: Photo of the general vicinity of the proposed location alternative.

Please contact me if there are additional questions or concerns.

Thank you.

Daniel Hedrick
Director-Environmental Affairs

PO Box 551 | Springfield, MO 65801-0551
cityutilities.net

Response to Comment from City Utilities of Springfield

This comment documents a situation as described in the plan under the heading "Unanticipated Network Modifications." Communication between City Utilities of Springfield staff and department staff regarding the possibility of relocating the Fellows Lake site only began after the posting of the draft plan for public review. The comment from Mr. Hedrick of City Utilities serves to document that communication.

The department appreciates the support of City Utilities for air monitoring, the communication of the issue, the offer of a new monitoring site and assistance with installation of utilities, and the willingness to accommodate monitoring during the current ozone season. The Fellows Lake site is designated as urban scale, representative of an area with dimensions on the order of four to 50 kilometers, or 2.5 to 30 miles (40 C.F.R. § 58, Appendix D). The proposed new site is approximately one-half mile west of the current site and is representative of the same air mass. Therefore, data continuity will not be affected by the relocation. Based on current understanding of the proposed new site, we believe that the new site will meet siting criteria (40 C.F.R. § 58, Appendix E). We will continue to work over the next few months to evaluate the site, including onsite evaluation, and, if it continues to appear suitable, to relocate the monitoring station to the proposed location. The department will provide details of the site evaluation and documentation of the relocation to EPA Region 7 staff and will also address this location change in the 2023 plan.

Comment from D. Zink

DNR: Public Comment, Draft Air Monitoring Plan 2022

D. Zink

6/23/22

I am very appreciative of the consistent effort put forth by DNR to maintain the qualities of life in the State of MO. Publishing the air monitoring data online is an excellent step toward ensuring transparency, which builds trust between citizens, government and industry.

Industry holds a high degree of responsibility for protecting the health of the community and surrounding area of operations. As such, they should be proactively supportive of monitoring in order to address issues related to industrial *operations to reduce harm to the population in that area, to preserve the natural values of this State and to avoid the costs of remediation.*

Some general comments regarding the draft monitoring plan:

1. When any anaerobic digester is installed, for any type of operation, the expected output and potential impact on local populations should be evaluated and permitted. Releases from anaerobic digesters pose multiple public health concerns, and should therefore be monitored regularly. Areas with multiple anaerobic digesters should have permanent monitoring sites.
    a. Methane – a greenhouse gas whose impact is four times greater than carbon dioxide *Piping and transportation of biogases is another part of the risk of release.
    b. NOx and ammonia – in addition to health concerns, these may lead to increased formation of ozone at low altitudes, exacerbating health impacts.
    c. PM 2.5 – the levels and impacts of PM2.5 are becoming more and more apparent. It is probably no coincidence that areas where PM 2.5 are high are also areas with the highest rates of childhood asthma.
    d. H2S, SO2 – these are known health hazards released during anaerobic digestion or during flaring of gases produced; acid rain is an additional potential as the combined output of SO2 increases with increasing release from multiple sources.

2. When a requirement for monitoring is discontinued, it should be clearly stated that the release from monitoring does not release the operation responsible for the conditions which led to the monitoring requirement from future issues resulting from the release. When a remediation plan is abandoned by DNR, this should be similarly handled. Future reuse of spent material may occur or future technology for reprocessing the waste may occur, leading to potential air and water contamination. The party responsible for the cost and successful remediation, whether the original operation or whether that is assumed by a new owner, should be clearly documented. This should not be nebulous, left to assumption.

Comments specific to the Draft Plan:

Responses to Proposed Changes:

Item 1: When an operation has a history of successfully meeting discharge limits, it seems appropriate to drop the frequency to a lower audit level, but when the pollutant discharged has a high health impact on a community and is a persistent pollutant, it also seems inappropriate to abandon monitoring altogether. Perhaps a random, unannounced audit every 2-3 years for sampling or scanning key parameters would be a way to ensure that attention to standards is maintained in the absence of regular monitoring.

Items 4 and 5: In addition to replacing aging equipment, new installations are needed in order to more fully represent the conditions in different areas of the State and the diversity of operations in those different areas. In addition to forested areas and urban and industrial areas, rural agricultural areas must be included. Geographical area as well as population density needs to be considered. Air distributes further and faster than water, crossing state and national boundaries and carrying any releases originating from the geographical swath represented and the concentration of industries within those geographical areas. In particular, continuous monitors should be installed in the Bootheel area of MO as well as in the northeast and north central areas of the State. Further, an active effort to engage with public health representatives from areas where monitors are implemented should be done so possible correlations can be evaluated and remedies planned. A clear example in the SO2 Monitoring Network, page 16 of the draft, would be why St. Louis, Moberly and Sikeston have such high releases relative to the population and area. Overlaying a map of the rate of childhood asthma, inflammatory illnesses or cancers to the monitoring maps should provide some useful insights for coordinated efforts to have positive impact. Total tons emitted from an urban area may appear large, but should total tons emitted from a larger rural area be assessed, those numbers could easily be considerably larger. Allocation of resources toward resolution of issues cannot be effective without more comprehensive evaluation.

Sections 4 and 5:

Rural and agricultural areas are grossly under-represented in this monitoring plan, which means that health impacts are not properly assessed and data necessary for planning, evaluation and impact reduction cannot be accomplished. The role of DNR in protecting public health should not be under-estimated.

Thank you in advance for your consideration of these comments.

D. Zink

Response to Comment from D. Zink

(Bold headers are short summaries of comment subjects.)

Emissions and population impact of any anaerobic digester should be evaluated and a permit required. Releases should be monitored, and areas with multiple anaerobic digesters should have permanent monitoring sites.
The Annual Monitoring Network Plan fulfills the obligation under the Code of Federal Regulations (CFR), Title 40, § 58.10(a) requiring the Missouri Department of Natural Resources to assess and demonstrate that its ambient monitoring network meets the applicable monitoring requirements of 40 CFR Part 58 and to identify any proposed network changes. A primary purpose of the monitoring network is to determine whether areas in Missouri are meeting National Ambient Air Quality Standards (NAAQS). The Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to establish NAAQS for designated Criteria Pollutants and the states to adopt enforceable plans to achieve those standards. Thus, the plan addresses ambient air monitoring and does not describe all of the other activities of the Air Pollution Control Program, which include permitting, compliance and enforcement, promulgation of rules, and planning related to meeting other federal requirements. Anaerobic digesters, along with other facilities, require permits that include conditions for emissions. There could be a need for air monitoring in an area with multiple anaerobic digesters depending on permitted emission limitations and on the results of modeling.

When a monitor is discontinued, it should be clearly stated that the discontinuation does not release a facility from emission limits. This should be true of remediation activities.
As stated above, the primary purpose of the plan is to fulfill the regulatory requirement for submittal of an annual monitoring network plan to EPA. The plan addresses ambient air monitoring and does not describe all of the other activities of the Air Pollution Control Program, which include permitting, compliance and enforcement, promulgation of rules, and planning related to meeting other federal requirements. Discontinuation of an ambient monitor does not change any facility's permit conditions, including emission limits. In some cases, air monitoring is required during remediation activities and discontinued when remediation is complete. Such monitoring is not covered by the Air Monitoring Network Plan but is governed by remediation plans under the jurisdiction of the department's Environmental Remediation Program.

Referring to no. 1 in the plan under proposed changes, facility-related monitoring should not be discontinued altogether, but should be repeated at random intervals to ensure that the facility continues to meet requirements.
The referenced item in the plan proposes discontinuation of a lead monitor near a specific lead mine. Reported emissions from that facility are less than 0.5 tons per year. Therefore, monitoring near that facility is not required by federal regulations. Also, since the installation of the expanded lead monitoring network in 2010, that specific monitor has not shown a violation of the lead NAAQS. Permit conditions related to operation of that facility would

continue to apply, and permitted facilities are subject to inspection to evaluate their compliance with permit conditions.

Referring to no. 4 and 5 in the plan under proposed changes, in addition to replacing aging equipment, new monitoring sites are needed in new locations, including rural areas, in particular in the bootheel, northeast, and north central areas of Missouri. SO_2 emissions in the St. Louis, Moberly, and Sikeston areas should be considered. Rates of childhood asthma and cancer should be considered.
The referenced items in the plan describe replacement of aging monitors with retrofitted or new instruments in order to maintain the reliability of particulate monitoring in the network. Please see the section below for additional discussion of sites in rural areas.

The relatively high SO_2 emissions listed in the plan for some areas with relatively low populations are a result of emissions from power plants or other large industrial facilities. The SO_2 Data Requirements Rule (DRR), which applies to facilities with greater than 2,000 tons per year of actual SO_2 emissions, provides three ways that a facility can characterize air quality to comply with the rule: through ambient air quality monitoring, through air quality modeling, or through the establishment of permanent, enforceable limits of SO_2 emissions to less than 2,000 tons per year. The Thomas Hill plant near Moberly, the Sikeston plant, and several facilities in the greater St. Louis area opted for modeling. The Labadie and Rush Island plants opted for monitoring, and monitoring near those plants is currently underway. Monitoring is also currently taking place near the New Madrid plant and Magnitude 7 aluminum plant, very close to the bootheel.

The Blair Street site in St. Louis and the Troost site in Kansas City are examples of sites located in urban areas with increased population density.

Rural and agricultural areas are grossly under-represented in this plan.
There is a higher concentration of monitoring sites in urban areas because there is a higher concentration of emission sources and population in those areas. However, 18 of the 42 monitoring sites in Missouri are in locations that could be considered to be rural and/or agricultural, including: Orchard Farm, West Alton, Foley West, Trimble, Watkins Mill, Liberty, Rocky Creek, Richards Gebaur-South, Buick Northeast, Oates, Carthage, El Dorado Springs, Hercules Glades, Mingo, Farrar, Bonne Terre, and Mark Twain State Park. Note that some of these sites are named for the town nearest the site, but are located in rural areas.

Comment from Great Rivers Environmental Law Center, Missouri Coalition for the Environment, Opponents of Cooper County CAFOs, Socially Responsible Agriculture Project, and Moniteau County Neighbors Alliance

June 23, 2022

VIA ELECTRONIC MAIL

Missouri Department of Natural Resources
Air Pollution Control Program
Air Quality Analysis Section/Air Monitoring Unit
P.O. Box 176
Jefferson City, MO 65102-0176
cleanair@dnr.mo.gov

Re: Comments to Draft 2022 Monitoring Network Plan

To Whom It May Concern:

Great Rivers Environmental Law Center ("Great Rivers"), Missouri Coalition for the Environment ("MCE"), Opponents of Cooper County CAFOs ("OCCC"), Social Responsible Agriculture Project ("SRAP"), and Moniteau County Neighbors Alliance respectfully submit to the Missouri Department of Natural Resources ("MDNR") the following comments to the proposed Draft 2022 Monitoring Network Plan (the "Plan").

Great Rivers is a public interest law firm that provides free legal services to individuals, organizations and citizen groups working to protect the environment and public health.

MCE is Missouri's independent, citizens' environmental organization for clean water, clean air, clean energy and a healthy environment. MCE is a trusted, non-partisan, 501(c)(3) state-level environmental advocacy organization, an informed educator, a passionate advocate, and a state-wide partner supporting allied organizations and initiatives around the state. With the help of its over 800 members and more than 2000 allies across the State, MCE delivers vital information to thousands of Missourians on issues that affect the State's water, air, food, health, and environment. Throughout its existence, MCE has actively engaged in efforts to preserve

Missouri's air quality, including seminal litigation that helped strengthen National Ambient Air Quality Standards.

OCCC is a rural community organization committed to protecting the clean air, water and natural resources in rural Cooper and Moniteau Counties in Missouri.

For more than 20 years, SRAP has served as a mobilizing force to help communities protect themselves from the damages caused by industrial livestock operations and to advocate for a food system built on regenerative practices, justice, democracy, and resilience.

Moniteau County Neighbors Alliance supports community health and economic well-being through education and advocacy.

The Plan fails to address the impacts of air pollution on low-income people of color; fails to address several important state-wide sources of air pollution such as pollution from coal plants, CAFOs and mining operations; and on the whole fails to endorse a monitoring plan that includes sufficient ambient air monitoring. MDNR should address these failings in the Plan before issuing it in final form so as to protect the health of all Missourian, but in particular, the low-income people of color who have been systematically overburdened by air pollution in the state and as a result, are most vulnerable to its continued impacts. Doing so would be of direct benefit to Great Rivers and the members of all undersigned organizations.

The Plan Fails to Comply with Title VI

MDNR appears to be in violation of Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d, and 40 C.F.R. Part 7 by releasing the Plan 1) without complying with any of the EPA procedural safeguard regulations found in 40 C.F.R. Part 7 to prevent discrimination; and 2) by failing to analyze whether the Plan causes disproportionate and disparate environmental and human health effects on low-income communities of color in the State. MDNR must rectify these violations to avoid any unlawful discrimination by 1) implementing a Title VI program that complies with EPA regulations before issuing the Plan in final form and 2) including in the Plan an analysis of whether the Plan causes disproportionate or disparate environmental or human health impacts on low-income communities of color in the State.

Recipients of federal funding are prohibited from taking actions that have a discriminatory impact on people of color. Title VI of the Civil Rights Act of 1964 states:

> No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination under any program or activity receiving any Federal financial assistance. [1]

[1] 42 U.S.C. § 2000d.

EPA's implementing regulations further prohibit recipients of EPA funding from discriminating. Specifically, EPA's Title VI regulations provide that an EPA funding recipient:

> shall not use criteria or methods of administering its program or activity which have the effect of subjecting individuals to discrimination because of their race, color, national origin, or sex, or have the effect of defeating or substantially impairing accomplishment of the objectives of the program or activity with respect to individuals of a particular race, color, national origin, or sex.[2]

EPA's regulations make clear that discrimination on the basis of race is a violation of Title VI whether such discrimination is the purpose of the decision or its effect.[3]

As a condition of receiving federal funding, recipient agencies such as MDNR must comply with EPA's Title VI regulations, which are incorporated by reference into the grants. These regulations proscribe discrimination on the basis of race, color or national origin by any program or agency receiving financial assistance from the EPA.[4] In other words, Title VI creates for recipients a nondiscrimination obligation that is contractual in nature, in exchange for Federal funding. Acceptance of EPA funding creates an obligation on the recipient to comply with the regulations for as long as that funding is provided.[5] In particular, a state agency accepting EPA funding may not take any action that is intentionally discriminatory or that will have a discriminatory effect based on race, color, or national origin.[6] MDNR, a state agency, is a recipient of federal funds governed by these requirements. It does not appear that MDNR has conducted any of the safeguard procedures or analyses required by Title VI and EPA's implementing regulations in preparing the Plan. It is also notable that MDNR has received two grants totaling $168,648 "to operate and maintain the national ambient air toxics site in St. Louis...to improve air quality."[7] These funds were granted to support "[p]rojects [which] should also focus on addressing environmental justice (EJ) concerns in communities," through "fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income."[8] Under these circumstances it is even more important that MDNR take environmental justice concerns into consideration in monitoring planning and decision making such as that set forth in the Plan.[9]

[2] 40 C.F.R. §§ 7.35(b).
[3] *Id.*
[4] 40 C.F.R. §§ 7.30; 7.35.
[5] 40 C.F.R. § 7.35.
[6] *Id.*
[7] USA Spending.gov, located at: https://www.usaspending.gov/#/award/ASST_NON_97764201_6800 (last visited August 28, 2020) and https://www.usaspending.gov/#/award/ASST_NON_97782701_6800 (last visited August 28, 2020)
[8] *Id.*
[9] For purposes of this comment letter, the phrase "environmental justice" is intended to have the meaning accorded to it by U.S. EPA in their recently issued Guidance, *EPA Legal Tools to Advance Environmental Justice* (May 22): "***Environmental justice*** is the fair treatment and meaningful involvement of all people regardless of race, color,

Before issuing the Plan in final form, MDNR must satisfy the safeguarding requirements set forth in 40 CFR Part 7. These include, but are not limited to:

- facilitating informational meetings for low-income communities of color about the Plan and the impacts it might have on those communities;

- providing public information about the Plan in languages other than English, and offering translators and interpreters at public meetings; and

- establishing and publishing grievance procedures, in accordance with EPA's Title VI implementing regulations, to ensure the prompt and fair resolution of discrimination complaints.

Further, MDNR must include a consideration and analysis of the disparate and cumulative impacts that the Plan may have on low-income communities and/or communities of color. The undersigned respectfully request that MDNR take into consideration any such cumulative impacts that air pollution in Missouri has on low-income communities and communities of color in designing and maintaining its air monitoring network.

The Plan Contains Insufficient Ozone Monitoring

Relatedly, the undersigned take issue with the lack of ozone air monitoring in Missouri that is endorsed by the Plan. Although additional ozone monitoring may not be required in Missouri by the letter of applicable laws and regulations, additional monitoring would serve to provide information that would be helpful to populations of Missourians who already shoulder a significant share of the state's air pollution burden. It is well-documented that air pollution, including ozone and its precursors, more severely impacts low-income people of color, many of whom are already overburdened by other sources of pollution.[10] This is the case because people of color, as well as those with lower incomes, are more likely to live near truck and traffic routes, as well as stationary sources of pollution.[11] The St. Louis metropolitan area is no exception – many areas bordering major highways and traffic thoroughfares and industrial polluters in the St. Louis area are populated by people of color and other economically disadvantaged communities.[12]

national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." *Id.* at p. 5.

[10] U.S. EPA, *Control of Air Pollution From New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards Proposed Rule,* 87 Fed. Reg. 17414, 17418, 17452 and 17584 (March 28, 2022).

[11] *Id.*

[12] Interdisciplinary Environmental Clinic at Washington University School of Law, *Environmental Racism in St. Louis,* located at https://7gxsl10eqdj9anba1k3swtoo-wpengine.netdna-ssl.com/wp-content/uploads/2020/08/2019-09-30_STL_Env_Racism_Report_REVISED_FINAL_Cropped.pdf. See also, US EPA, *EJScreen,* Map

It is well established that heightened exposure to NOx and ozone contributes to a variety of adverse health impacts – in particular asthma and respiratory illness, as well as cardiovascular problems.[13] Unfortunately, these heightened health risks bear out in St. Louis, especially in the low-income, predominantly Black neighborhoods in St. Louis City and County. In St. Louis County and the City of St. Louis, the same zip code areas that have large low-income, majority-Black populations also have significantly higher rates of asthma-related emergency room visits than the Missouri and National averages.[14] The City of St. Louis has the dubious honor of ranking first out of the 35 largest United States metropolitan areas in terms of asthma risk.[15] This risk has increased over the last decade.[16] Perhaps more startlingly, in a recent equity study compiled by the City of St. Louis, the City was awarded an equity score of 1 out of a possible 100 in the category of child asthma. The exceedingly low score was bestowed as a result of data showing that Black children living in the City of St. Louis are more than 10 times as likely as white children to visit emergency rooms for asthma-related complications.[17]

Perhaps even more compelling is data obtained from the Missouri Department of Health and Senior Services that compares the three-year moving average rates of emergency room visits due to asthma in Missouri and St. Louis for white and Black residents. These data show that Black residents were admitted to the emergency room for asthma at rates more than six times that of white residents in St. Louis County, and more than seven times that of white residents in St. Louis City. Perhaps worse yet, the data demonstrates that over the course of the 11-year period for which data was examined, these asthma-related emergency room admission rates have dropped for white residents of Missouri and St. Louis City, but those for Black residents continue to climb.[18] These data are proof that asthma disproportionately impacts Black residents of the St. Louis area. Additional ozone monitoring is needed to help document any air pollution-

Comparisons for St. Louis, Missouri, Pct. People of Color and Traffic Proximity, located at https://ejscreen.epa.gov/mapper/comparemapper.html; US EPA, *ECHO Enforcement and Compliance History Online,* mapping tools for stationary air sources in the St. Louis area, located at https://echo.epa.gov/facilities/facility-search/results.

[13] *See Note 10* at pp.17444-17447.

[14] Missouri Department of Health and Senior Services, *EPHT Asthma Data by zip code,* located at https://healthapps.dhss.mo.gov/MoPhims/QueryBuilder?qbc=EA&q=1&m=1; City of St. Louis Department of Health, *Understanding Our Needs, Update* (2016), page 15, located at https://www.stlouismo.gov/government/departments/health/documents/upload/UON-20160102.pdf.

[15] East-West Gateway Council of Governments, *Where We Stand: Twenty Years Later*, located at: https://www.ewgateway.org/wp-content/uploads/2017/08/WWS6EdNo3.pdf.

[16] *Id.*

[17] City of St. Louis, *Equity Indicators Toward a St. Louis Region that works for us all, Baseline Report* (2018), at pp. 36-37, located at: https://www.stlouis-mo.gov/government/departments/mayor/initiatives/resilience/equity/documents/upload/Equity-Indicators-Baseline-2018-Report-Document.pdf.

[18] Missouri Department of Health and Senior Services, *DHSS-MOPHIMS Community Data Profiles,* located at https://healthapps.dhss.mo.gov/MoPhims/ProfileTrendAnalysis?pid=25&iid=25000153&ge=CNTY&gf=189&de=RACE.

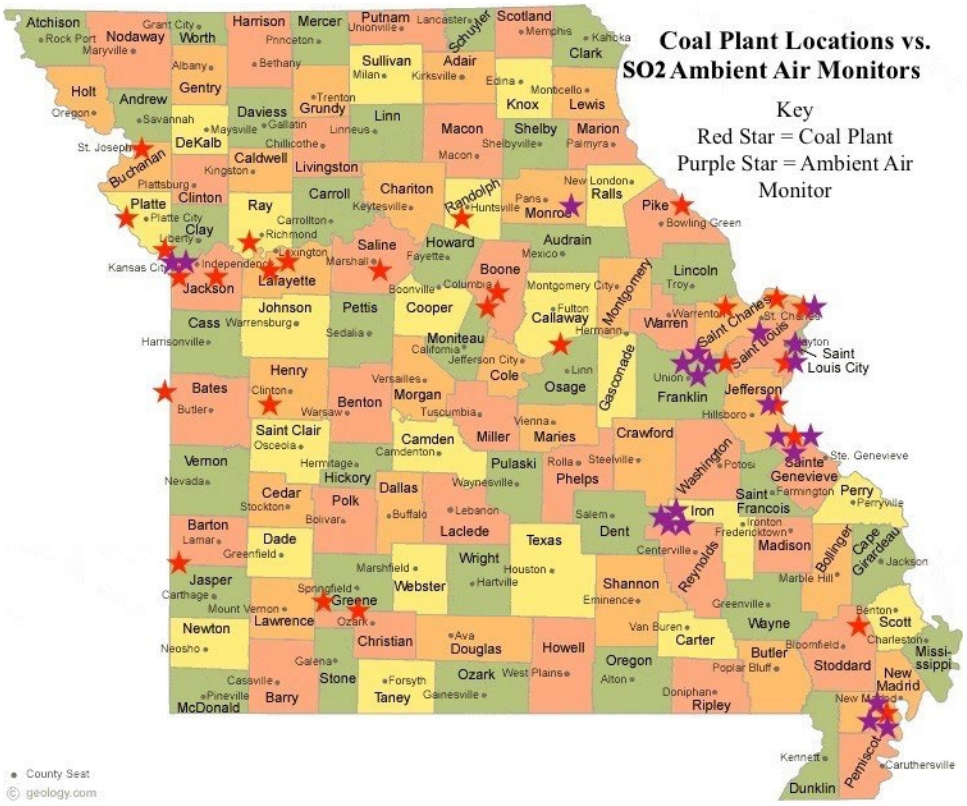
related sources of this asthma. The undersigned request that MDNR consider adding additional ozone and NOx monitors to the Plan.

Additional ozone monitoring also would be helpful to understanding and addressing the ozone nonattainment status of the St. Louis metropolitan area. The St. Louis metropolitan area (including St. Louis City, St. Louis County and several surrounding counties) is currently designated as a marginal nonattainment area for ozone.[19] Further, EPA has proposed to bump the area up to moderate nonattainment, in light of a history of continued ozone exceedances.[20] Additional ozone and NOx monitors would go a long way towards understanding where this excess pollution is coming from, and in turn, would help MDNR to devise mechanisms for addressing it. Data from additional monitors would also help inform residents' immediate health decisions, such as whether to let a child with asthma play outside on a high-ozone day.

The Plan Fails to Adequately Address the Pollution Risks from Coal Plants

In light of Missouri's continued overreliance on coal-fired power, the Plan is shockingly lacking in any analysis of the air pollution risks associated with the many coal energy generation facilities operating across the state. In 2021, coal provided 74% of Missouri's electricity net generation, the second-highest share of any state, behind only West Virginia.[21] Despite this prevalence of coal-fired power plants around the state, as is shown on the map below, there are very few air monitors endorsed by the Plan that are specifically designed to address the air pollution from these coal plants. The undersigned call on MDNR to address this significant source of air pollution in the state.

[19] U.S. EPA, *Missouri Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants,* data current as of April 30, 2022, located at https://www3.epa.gov/airquality/greenbook/anayo_mo.html.
[20] U.S. EPA, *Reclassification of Areas Classified as Marginal for the 2015 Ozone National Ambient Air Quality Standards,* 87 Fed. Reg. 21842, 21845 Table 1 (April 13, 2022).
[21] U.S. Energy Information Administration, *Missouri State Profile and Energy Estimates,* located at https://www.eia.gov/state/?sid=MO.



The combustion of coal produces an exothermic reaction that releases particulate, gaseous, and metallic pollutants into the environment.[22] One of the biggest pollutants from coal plants is sulfur dioxide (SO_2). In the United States, coal-fired power plants account for 60% of sulfur dioxide emissions.[23] Exposure to air pollutants from coal plants produces significant adverse health effects, especially for children due to their developing physiology, anatomy, metabolism, and health behaviors.[24] Additionally, people of color and impoverished groups are more likely to live close to industrial areas like coal-fired power plants.[25] The map above shows the locations of the coal plants in Missouri versus the locations of the ambient air monitors for SO_2 run by MDNR as outlined in the air monitoring plan. The undersigned call on MDNR to include more SO_2 monitors in the Plan to address the pollution from these coal facilities, especially in areas where coal plants are located in or near low-income communities of color. For example, there are two coal plants in operation around Columbia, Missouri, home of the University of Missouri. In light of the fact that many teenagers whose brains are still developing

[22] Amster, E. and Lew Levy, C., "Impact of Coal-fired Power Plant Emissions on Children's Health: A Systematic Review of the Epidemiological Literature," *International Journal of Research and Public Health* 16(11) (June 2019), located at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6604200/.
[23] *Id.*
[24] *Id.*
[25] Israel, B., "Coal Plants Smother Communities of Color," *Scientific American,* (Nov. 16, 2012), located at https://www.scientificamerican.com/article/coal-plants-smother-communities-of-color/#:~:text=People%20living%20near%20coal%20plants,percent%20are%20people%20of%20color.

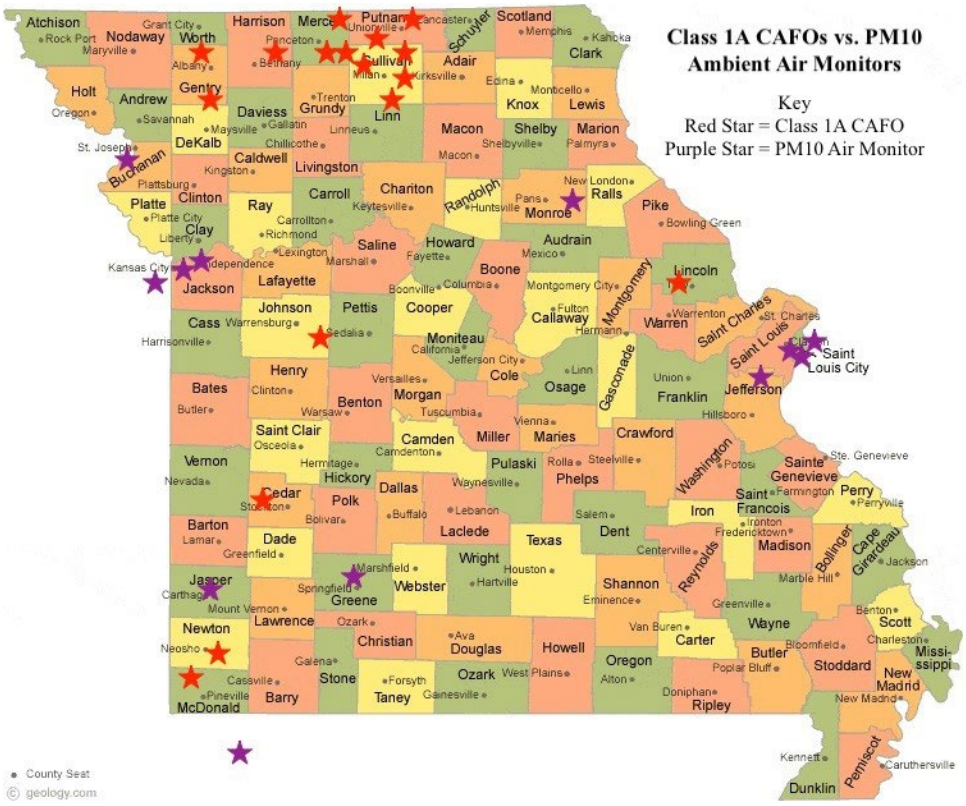
live in and around the University, MDNR should be monitoring the SO_2 emissions that could be impacting this especially vulnerable population. Additionally, as shown by the map above, there is a significant lack of SO_2 monitoring around I-70 and in the southwest portion of the state, although there are many coal plants located in these areas. The lack of SO_2 monitoring near I-70 is of particular concern as people of color, as well as those with lower incomes, are more likely to live near truck routes.[26]

As cited in MDNR's proposed air monitoring plan for 2022, the EPA finalized the SO_2 Data Requirements Rule (DRR) in 2015. This rule requires air agencies to characterize air quality, either by monitoring or modeling, around sources that emit 2,000 tpy or more of SO_2.[27] However, MDNR fails to meet the requirements of the DRR with their current proposed plan. MDNR cites Moberly, MO (in Randolph County just northwest of Boone County where the University of Missouri is) as having 16,556.63 tpy of SO_2 emissions in 2017.[28] According to this data, MDNR is likely required by the DRR to put an SO_2 monitor on the Thomas Hill coal plant that is in Moberly. Additionally, Sikeston, Springfield, and the Fayetteville-Springdale-Rogers area (a portion of which extends into Southern Missouri) all have SO_2 emissions greater than 2,000 tpy, but seem to be missing SO_2 monitors at coal plants in the vicinity.[29] While there are industrial air monitors located at some of the coal plants in Missouri, there are not enough. Additionally, the process for determining where MDNR will require an SO2 monitor at a coal plant is unclear. Overall, there is a significant lack of ambient air monitoring near coal plants in Missouri. The undersigned call on MDNR to implement additional air monitoring in these areas due to the high levels of emissions, the common presence of populations especially vulnerable to these coal emissions because of age, infirmity or cumulative impacts, as well as the significant health impacts associated with the operation of these plants.

<u>The Plan Fails to Address Air Pollution from CAFOs</u>

The Plan is notably lacking in any discussion of air pollution from concentrated animal feeding operations (CAFOs) across the state. Further, as is shown on the map below, there do not appear to be any air monitors endorsed by the Plan designed to address CAFO-related air pollution.

[26] U.S. EPA, *Control of Air Pollution From New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards Proposed Rule,* 87 Fed. Reg. 17414, 17418 (March 28, 2022).
[27] The Plan at p. 18.
[28] *Id.* at 16.
[29] *Id.*



CAFOs can be extremely detrimental to both human health and the environment.[30] A recent study published in the National Academy of Sciences shows that over 17,000 annual deaths in the U.S. are attributable to pollution from farms.[31] Of these deaths, around 80% are due to air pollution from animal agriculture.[32] Further, emissions from animal agriculture now account for more annual deaths than pollution from coal power plants.[33] Harmful air pollutants produced from these operations include ammonia, hydrogen sulfide, methane, and particulate matter.[34] The decomposition of animal manure is the main cause of these gaseous emissions, while particulate matter is caused by the movement of animals.[35] Repeated exposure to particulate matter can have significant adverse health effects, including chronic bronchitis, chronic respiratory symptoms, decline in lung function, and organic dust toxic syndrome.[36] While CAFOs present adverse health effects for all people, children are especially at-risk

[30] National Association of Local Boards of Health, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, located at https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf
[31] Domingo, N. et al., "Air quality–related health damages of food," *PNAS* (May 10, 2021), located at https://www.pnas.org/doi/10.1073/pnas.2013637118.
[32] *Id.*
[33] *Id.*
[34] *See* Note 29.
[35] *Id.*
[36] *Id.*

because they take in 20-50% more air than adults, and their bodies are still developing.[37] Researchers in North Carolina have found that the closer a child lives to a CAFO, the greater the risk that they have asthma.[38] Further, the schools that are closer to CAFOs often are attended by students of lower socioeconomic status.[39] Particulate matter is of especially great concern because exposure over a long period of time can lead to decreased lung function.[40]

Considering the significant adverse health and environmental effects that CAFOs can have on communities, the Plan proposes a noticeable lack of air monitoring to address these facilities. The map above shows the locations of Missouri's Class 1A CAFOs versus the locations of MDNR's PM_{10} ambient air monitors as outlined in the air monitoring plan. Class 1A CAFOs are the biggest category of CAFOs in Missouri, meaning that they have 7,000 or more animal units.[41] As shown on this map, most of Missouri's Class 1A CAFO operations are concentrated in the northwest portion of the state, particularly in Sullivan, Putnam, and Mercer counties. The Plan proposes virtually no PM monitoring in these same locations. The undersigned call on MDNR to add monitors to the Plan to address this significant source of pollutants.

In addition, we know that many of Missouri's Class IA CAFOs utilize anaerobic digesters to create and capture biogas.[42] Understanding that some states already require air permits for livestock anaerobic digesters, we believe it is also necessary for Missouri to consider monitoring and/or permitting these systems to better understand and regulate emissions from anaerobic digestion and biogas capture. We ask that MDNR make evident in the Plan what air quality monitoring and/or permitting is currently being done at these CAFOs, if any.

Further, although ambient monitoring of ammonia, hydrogen sulfide, and methane emissions is not required by applicable laws and regulations, the undersigned urge MDNR to address these dangerous CAFO-related pollutants as well. MDNR includes no proposed monitors to address these three dangerous pollutants in the Plan, even though these pollutants are

[37] Kleinman, M., "The Health Effects of Air Pollution on Children," *South Coast Air Quality Management District* (Fall 2000), located at http://www.aqmd.gov/docs/default-source/students/health-effects.pdf.
[38] Barrett, J., "Hogging the Air: CAFO Emissions Reach into Schools," *Environmental Health Perspective* 114(4), located at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1440820/#:~:text=Of%20the%20226%20schools%20included,reported%20noticeable%20livestock%20odors%20indoors.
[39] Mirabelli, M. et al., "Race, Poverty and Potential Exposure of Middle-School Students to Air Emissions from Confined Swine Feeding Operations," *Environmental Health Perspective* 114(4): 591-596, located at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1440786/.
[40] Michigan Department of Environmental Quality Toxics Steering Group, *Concentrated Animal Feedlot Operations Chemicals Associated with Air Emissions* (May 10, 2006), located at https://www.michigan.gov/-/media/Project/Websites/mdhhs/Folder1/Folder50/CAFOs-Chemicals_Associated_with_Air_Emissions_5-10-06.pdf?rev=ac7b6d7bb56c4b85a378ce8fb9a30442.
[41] MDNR, *CAFO Permits,* located at https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/concentrated-animal-feeding-operation-cafo.
[42] U.S. EPA, *AgSTAR Livestock Anaerobic Digester Database*, located at https://19january2021snapshot.epa.gov/agstar/livestock-anaerobic-digester-database_.html.

dangerous to public health. The undersigned believe it would be appropriate for MDNR to utilize Special Purpose Monitors (SPMs) to address these dangerous CAFO-related emissions.

The Plan Disturbingly Fails to Address the Pollution Risks from Mining

The Plan also has failed to address mineral mining in Missouri. Mineral mining is a very big industry in Missouri. According to MDNR, Missouri currently has 864 active sites permitted to mine industrial minerals, under the Land Reclamation Act, and sites permitted to mine metallic minerals under the Metallic Minerals Waste Management Act.[43] Notably, Missouri leads in fire clay, lead, lime, montmorillonite, and tripoli production and is a major producer of crushed stone, cement, and zinc.[44] Common pollutants from these mining operations include sulfur dioxide and particulate matter.[45] SO_2 is of particular concern because it reacts with atmospheric water vapor to form sulfuric acid or "acid rain."[46] Acid rain can be extremely detrimental to plants and agriculture - harming existing vegetation and making the soil unsuitable for future growth.[47] Further, mining operations can cause significant adverse public health impacts for nearby communities; for example, higher levels of lead in blood have been measured in residents of some communities located near lead-zinc smelters during their operation.[48] The Plan does not in any way address this potentially enormous source of pollution in the State. The undersigned request that MDNR include a consideration of mining-related air pollution in the Plan, and make provisions for monitoring to address it.

Concern Over Functionality of Certain Air Monitors

The undersigned remain concerned over the functionality of certain air monitors that are a part of the monitoring network as laid out in the Plan. Numerous situations occurred in 2021 and this year when data was missing from both primary and secondary air monitors in certain locations; when MDNR had to rely on data from a secondary air monitor because the primary one was inoperative; or when both data sets failed to meet the completeness criteria set forth in 40 C.F.R. Part 50. Monitoring stations of concern include Hillcrest High School (Springfield), Maryland Heights (St. Louis), Watkins Mill (Kansas City), Liberty (Kansas City), Foley West (St. Louis), Orchard Farm (St. Louis), West Alton (St. Louis), Fellow Lake (Springfield) and Trimble (Kansas City) for ozone; Ameren Missouri, Labadie Valley site (St. Louis), Ameren Missouri, Rush Island Weaver site (St. Louis), and Ameren Missouri, Rush Island Fults, IL site

[43] MDNR, *Industrial Minerals and Metallic Mineral Waste Management Areas,* located at https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=9ce9dbcc86a04cd78cd5554799155ac2.
[44] USGS National Minerals Information Center, *The Mineral Industry of Missouri,* located at https://www.usgs.gov/centers/national-minerals-information-center/mineral-industry-missouri.
[45] American Geosciences Institute, *How Can Metal Mining Impact the Environment,* located at https://www.americangeosciences.org/critical-issues/faq/how-can-metal-mining-impact-environment#id4.
[46] *Id.*
[47] *Id.*
[48] *Id.*

(St. Louis) for SO_2; and Hillcrest High School (Springfield) for $PM_{2.5}$.[49] The functionality of the Hillcrest High School monitoring station in Springfield seems to be of particular concern because it appears that readings for both ozone and $PM_{2.5}$ were unavailable on numerous dates. The undersigned request that MDNR address these potentially faulty air monitors in the Plan.

MDNR Should Embrace and Support Community Air Monitoring as Part of the Plan

Born out of concerns that State criteria pollutant monitors do not provide meaningful information about air quality in specific neighborhoods, several organizations in Missouri are engaged in community air monitoring projects around the state. MCE is currently supporting community-based air quality monitoring of hydrogen sulfide, ammonia and particulate matter emissions. Great Rivers is installing a network of ozone monitors in the Dutchtown neighborhood in South City. Metropolitan Congregations United has installed PM monitors at churches around the St. Louis area. KC Digital Drive and other community partners are gathering climate and particulate matter air quality data along the Troost Avenue corridor in Kansas City. The undersigned intend to use the air quality monitoring data they collect to educate and empower residents about their air quality, and to advocate in support of the need for stricter air pollution controls. There is currently no federal or state regulatory support for the type of citizen data these systems will collect, either in the air permitting process, or the state implementation planning processes. However, the opportunity certainly exists for EPA and MDNR to engage with citizen data on many levels – through community education and engagement; pollution control planning, stationary source permitting being just a few. To the extent MDNR supported citizen science efforts such as those described herein, the data could be used for community engagement and education on a state regulatory level. In addition, organizations such as the undersigned could use their data to work with MDNR to lobby for additional funds to be directed to MDNR for monitoring purposes. The undersigned respectfully request that MDNR consider enacting regulations that recognize and support community science.

We look forward to MDNR's response to these comments. Thank you for your consideration.

Sincerely,

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[49] Monitoring data was obtained from MDNR, *Air Pollutants and Sources,* individual pollutant sites, located at https://dnr.mo.gov/air/hows-air/pollutants-sources.

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Response to Comment from Great Rivers Environmental Law Center, Missouri Coalition for the Environment, Moniteau County Neighbors Alliance, Socially Responsible Agriculture Project, and Moniteau County Neighbors Alliance

(Bold headers correspond to underlined headers in the comment document.)

The plan fails to comply with Title VI of the Civil Rights Act of 1964.
Comment authors argue that the plan violates Title VI of the Civil Rights Act of 1964 because (1) the department does not have procedural safeguards in place under the Code of Federal Regulations (CFR) Title 40, §§5 and 7; and, (2) the plan fails to evaluate disproportionate impacts and disparate impacts on protected class communities.

The purpose of the Annual Monitoring Network Plan is to fulfill the obligation under 40 CFR 58.10(a), requiring the Missouri Department of Natural Resources to assess and demonstrate that its ambient air monitoring network meets the applicable monitoring requirements of 40 CFR Part 58, and to identify any proposed network changes. The primary purpose of the monitoring network is to determine whether areas in Missouri are meeting National Ambient Air Quality Standards (NAAQS). The Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (EPA) to establish NAAQS for designated Criteria Pollutants and the states to adopt enforceable plans to achieve those standards.

The department followed its process for public notice and comments. The department posted the plan on the internet for 30 days for public review and comment as required by the same regulation and in accordance with Title VI procedural safeguards. The department announced the availability of the plan for public review by email to 2,440 recipients on various mailing lists of persons who have expressed an interest in receiving information from the Air Pollution Control Program with an 88 percent delivery success rate. This final version of the plan includes the comments received and the department's responses to comments.

The department has Title VI procedural safeguards as required by 40 CFR Parts 5 and 7. (https://dnr.mo.gov/ada-non-discrimination), (https://dnr.mo.gov/document-search/notice-under-americans-disabilities-act), (https://dnr.mo.gov/document-search/grievance-procedures-under-americans-disabilities-act), (https://dnr.mo.gov/document-search/modnr-policy-111-external-complaint-response-policy), (https://dnr.mo.gov/document-search/external-complaint-discrimination-form-mo-780-2926).

All monitors in the Missouri air monitoring network, including those operated by the state and industries under state review, meet the applicable requirements of 40 CFR 58, and siting requirements described at Appendix E. The monitoring plan does not violate Title VI. Comment authors assert Title VI was violated by failing to consider disparate impacts (a Title VI consideration), disproportionate impacts (federal policy guidance) and cumulative impacts (federal policy guidance). First, the authors provide no specific justification for the alleged deficiency, only that the plan as drafted violates Title VI because it presents the prior EPA-

approved plan, facts that have changed since the plan was adopted and proposed changes in accordance with the law. The authors present no data for the department to respond or evaluate in terms of the pollutant/siting requirements of the law. Next, the authors identify a failure to conduct a disproportionate impact or cumulative impact analysis. However, the purpose of a monitoring plan is to measure effects of air emissions on communities throughout the state in locations determined according to the pollutant/scale specific requirements per 40 CFR 58. The pollutant specific siting requirements at Appendix E do not include guidance on how to identify impacts in terms other than specific pollutants to warrant moving monitors from one location to another. Lastly, as described in more detail below and in the 2018 Monitoring Network Plan (https://dnr.mo.gov/document-search/2018-monitoring-network-plan), the Blair Street site measures the NO_2 exposure of a susceptible and vulnerable community, and the Forest Park, Rider Trail, and Blue Ridge sites measure the concentrations of NO_2 near the I-70 and I-64 highways.

The plan contains insufficient ozone and NO_X monitoring.
The comments focus on ozone and NO_X monitoring in the St. Louis area. The 2019 – 2021 ozone design value for the St. Louis area is 0.069 parts per million (ppm), which is less than the health-effects-based NAAQS. In consideration of the design value and the population of the St. Louis core-based statistical area (CBSA) of 2,809,299, the required number of ozone monitors in the St. Louis area is two (40 CFR 58, Appendix D). There are currently 15 ozone monitors in the St. Louis CBSA, seven in Missouri, and eight in Illinois. The ozone monitoring network in the St. Louis area is considerably denser than the minimum regulatory requirement.

Chemical reactions of a combination of primary pollutants emitted from stationary and mobile sources cause the formation of ozone. Therefore, ozone tends to be regional, not local in its distribution. The highest concentration of ozone in an urban area is generally downwind of the city center. The network in the St. Louis CBSA in Missouri includes one site upwind of the city center, one in the city center, and five sites downwind of the city center, distributed so as to capture the highest concentration regardless of variations in wind direction. The West Alton site in St. Charles County, approximately 16 miles north of and generally downwind of the city center, has consistently been the design value site for the area. The Blair Street site in St. Louis City is an indicator of the ozone exposure of persons living in the city.

Appendix D of 40 CFR 58 requires 40 NO_2 monitors nationwide to be located in susceptible and vulnerable communities. For CBSAs with a population greater than 2.5 million, EPA requires two near-road sites. Previously, the Margaretta site in St. Louis was designated as an NO_2 site located in a susceptible and vulnerable community. The department replaced Margaretta for this designation with the Blair Street site as described in the 2018 Monitoring Network Plan (https://dnr.mo.gov/document-search/2018-monitoring-network-plan), which EPA approved in 2019. The Forest Park and Rider Trail sites measure the concentrations of NO_2 near the I-70 and I-64 highways in the St. Louis area, and the Blue Ridge I-70 site measures the concentration of NO_2 near I-70 in Kansas City. Recent design values for all sites are significantly less than the NAAQS. In addition, there are two NO_2 monitoring sites in the St. Louis CBSA in Illinois and one NO_2 monitoring site in the Kansas City CBSA in Kansas.

The plan fails to adequately address the pollution risks from coal plants.
The purpose of the Annual Monitoring Network Plan is to fulfill the obligation under 40 CFR 58.10(a), requiring the department to assess and demonstrate that its ambient air monitoring network meets the applicable requirements of 40 CFR 58, and to identify any proposed network changes. Thus, the plan addresses ambient air monitoring and does not describe all of the other activities of the Air Pollution Control Program, which includes permitting, compliance and enforcement, promulgation of rules, and planning activities related to meeting other federal requirements.

Coal-fired power generation plants, along with other facilities, require permits that include conditions on fuel use and require record-keeping, including source monitoring of the flue gas emitted from the plant. Ambient concentrations of pollutants, for example, sulfur dioxide (SO_2) can be measured by air monitors or can be conservatively estimated using air quality simulation modeling based on plant physical parameters, flue gas emission rates, and pollutant concentration measured in the flue gas. As discussed below, and as discussed in the monitoring plan where applicable, the air quality impacts of all coal-fired power plants in Missouri are being characterized by either air monitoring or by modeling.

The map in the comment document indicates approximately 28 coal-fired power plants. The source of the map is an out-of-date database and includes plants that are not coal-fired. Following are a few examples of incorrect indicators on the map. The star in the center of the state near the border of Callaway and Osage Counties may indicate the Callaway nuclear generating station or the Chamois power plant, which was retired in 2013. The Montrose plant near Clinton retired in 2018. The James River plant in Springfield retired in 2021. The Asbury plant in southwest Missouri retired in 2020. Online information sources consistently indicate ten coal-fired power plants in Missouri or 11 if the University of Missouri plant in Columbia is included (https://www.eia.gov/state/?sid=MO, https://coal.sierraclub.org/coal-plant-map, https://www.epa.gov/airmarkets/power-plants-and-neighboring-communities#mapping, https://en.wikipedia.org/wiki/List_of_coal-fired_power_stations_in_the_United_States). Two of these plants (the Ameren Meramec and Sioux plants) are planning for retirement within the next few years.

The comment states that "people of color and impoverished groups are more likely to live close to industrial areas like coal-fired power plant" and references a 2012 article in *Scientific American* that references a report by the National Association for the Advancement of Colored People (NAACP) titled "Coal Blooded: Putting Profits Before People" (https://naacp.org/resources/coal-blooded-putting-profits-people). The report evaluated 378 coal-fired power plants in the United States and ranked them using a scoring system based on emissions of SO_2 and NO_x, population within three miles, income of that population, and percentage of people of color in that population. Of the 378 plants, 15 were in Missouri. Of those 15, at least seven are closed, planned to be closed soon, or converted to natural gas. Of the 378 plants, 75 were given a grade of F. Only one of those 75 was in Missouri. Therefore, the statement quoted above is not characteristic of Missouri plants in 2022.

The comment identified several coal-fired facilities, referenced the SO_2 data requirements rule (DRR), and stated that ambient SO_2 monitoring should be done near those facilities. The DRR applies to facilities with greater than 2,000 tons per year of actual SO_2 emissions. It did not only provide for monitoring; it provided three ways that a facility could characterize air quality to comply with the rule: through ambient air quality monitoring, through air quality modeling, or through establishment of permanent enforceable limits of SO_2 emissions to less than 2,000 tons per year. Each of the following facilities referenced in the comment chose the modeling option for compliance with the DRR: Thomas Hill plant near Moberly, Sikeston plant, Twitty plant in Springfield, and Flint Creek plant near Gentry, Arkansas (https://dnr.mo.gov/document-search/evaluation-specifics-sources-subject-2010-1-hour-sulfur-dioxide-data-requirements-rule, https://www.epa.gov/sites/default/files/2016-07/documents/arkansas_source_characterization_2.pdf). The University of Missouri plant chose an enforceable emission limit, and the other power plants in Columbia are no longer burning coal.

The plan fails to address air pollution from CAFOs.
This comment states that the plan lacks discussion of air pollution from Concentrated Animal Feeding Operations (CAFOs).

The purpose of the Annual Monitoring Network Plan is to fulfill the obligation under 40 CFR 58.10(a), requiring the department to assess and demonstrate that its ambient air monitoring network meets the applicable monitoring requirements of 40 CFR 58, and to identify any proposed network changes. The primary purpose of the monitoring network is to determine whether areas in Missouri are meeting the NAAQS. The CAA requires EPA to establish NAAQS for designated Criteria Pollutants and the states to adopt enforceable plans to achieve those standards. Most Animal Feeding Operation (AFO) air emissions of concern are not classified as Criteria Pollutants and are, therefore, not regulated by any federal AFO-specific NAAQS under the CAA.

The comment further states that the plan proposes a noticeable lack of PM_{10} monitoring to address the facilities depicted in the map of Class 1A CAFO and PM_{10} Ambient Air Monitors. Page 32 of the 2022 Monitoring Network Plan describes the existing PM_{10} monitoring network, which meets the federal minimum requirement for monitoring PM_{10}. Appendix D of 40 CFR 58 specifies the approximate number of permanent stations required in Metropolitan Statistical Areas (MSAs) to characterize PM_{10} concentrations in areas where the population exceeds 100,000 residents. The St. Louis area meets this requirement with four monitoring sites, including one in Illinois. According to the 2021 United States Census Bureau Population Estimates (https://www.census.gov/data/tables/time-series/demo/popest/2020s-counties-total.html), none of the CAFO locations without PM_{10} monitoring sites have a population over 100,000 or qualify as an MSA and therefore all CAFO locations fall short of meeting the criteria that require PM_{10} monitoring.

The Annual Monitoring Network Plan documents that Missouri's air monitoring network complies with current federal regulations, details any changes proposed for the 18 months

following its publication and submittal, and provides specific information on the existing and proposed monitoring sites. Other activities of the air program, such as permitting, compliance and enforcement, planning, and promulgating rules, fall outside the scope of the plan.

The plan fails to address the pollution risks from mining.
As stated above, the primary purpose of the plan is to fulfill the regulatory requirement for the submittal of an annual monitoring network plan. The plan addresses ambient air monitoring and does not describe all of the other activities of the Air Pollution Control Program, which includes permitting, compliance and enforcement, the promulgation of rules, and planning related to meeting other federal requirements. Mining operations require permits that include emission limits.

The comment lists lead and zinc as metals mined in Missouri and states that "common pollutants from these mining operations include sulfur dioxide and particulate matter." However, the reference cited for this statement clearly states that smelting generates SO_2 emissions (https://www.americangeosciences.org/critical-issues/faq/how-can-metal-mining-impact-environment#id4). The last primary lead smelter in the U.S., in Herculaneum, Missouri, ceased operation at the end of 2013. The only primary zinc smelter operating in the U.S. is in Tennessee (https://www.nyrstar.com/operations/processing/nyrstar-clarksville). Therefore, SO_2 emission from metal mining or related activities is not an issue in Missouri.

Lead mining, secondary smelting, and, through 2013, primary smelting are (or were) conducted in Missouri. The department significantly expanded the network of lead monitors in Missouri in 2010 following the adoption of a more stringent lead NAAQS in 2008. The network included monitors in areas near primary and secondary smelters, near active lead mines and mills, and near areas where lead mining waste was disposed of in the past, some of which were undergoing remediation. None of the monitors showed a violation of the lead NAAQS attributable to mining or milling operations. Monitors near the secondary smelters showed exceedances of the NAAQS in the past but not in recent years. Monitors near the primary smelter showed exceedances in the past but not in recent years. The most recent exceedance near the primary smelter resulted from demolition activities after the smelter ceased operation. The department continues to monitor lead near the secondary smelters and in the area near the discontinued primary smelter.

Particulate matter, primarily PM_{10}, can be a result of mining operations or related minerals-processing activities. One of the department's PM_{10} monitoring sites, near Carthage, Missouri, is located near such a facility. The department continues to work with that facility to minimize emissions of particulate matter.

Concern over functionality of certain air monitors (incomplete data).
The comment stated that some sites did not meet data completeness requirements for ozone or SO_2 in 2021 or 2022. Actually, all ozone and SO_2 sites met the 40 CFR 50 data completeness requirements for 2021 and the first quarter of 2022. Note that ozone monitoring in Missouri is required only during March through October except at the Blair Street NCore site. Some of the sites mentioned (West Alton, Weaver, Fults, and Valley) had completeness issues in earlier years (especially in 2019) because of flooding, but none of them had completeness issues in 2021 or

2022 to date. As described in the plan, the West Alton monitoring station has been elevated on a platform above the 1993 flood level so that flooding is now much less likely to interrupt ozone measurements. Also, occasional reliance on a secondary ozone monitor if a primary monitor malfunctions should not be a cause for concern. Because of the importance of ozone monitoring, the department operates two ozone analyzers continuously at each site, and both monitors must meet the same quality assurance requirements. This redundancy helps to ensure data completeness with no reduction in data quality.

The comment also mentioned $PM_{2.5}$ data incompleteness at the Hillcrest High School site in Springfield. $PM_{2.5}$ data completeness at Hillcrest in 2021 was approximately 69 percent. As stated in the plan, the reliability of particulate matter measurement is improving with the replacement of aging equipment with either new or retrofitted instruments.

The department should support community air monitoring as part of the plan.
The purpose of the Annual Monitoring Network Plan is to fulfill the obligation under 40 CFR 58.10(a), requiring the department to assess and demonstrate that its ambient air monitoring network meets the applicable monitoring requirements of 40 CFR 58, and identify any proposed network changes. Compliant monitoring requires the use of Federal Reference Method (FRM) or Federal Equivalent Method (FEM) instruments and following strict protocols for instrument operation and quality assurance. Current community monitoring projects typically involve the use of less expensive sensors that do not meet the federal requirements for air monitoring, but nevertheless provide useful data, typically with enhanced spatial density. These projects are therefore outside the scope of the plan.

However, the department is supportive of community monitoring projects and has participated in community-oriented air quality projects in the past, including the St. Louis Community Air Project, and a project called "Advanced Sampling and Data Analysis for Source Attribution of Ambient Particulate Arsenic and Other Air Toxics Metals in St. Louis," which was funded by a Community Scale Air Toxics Ambient Monitoring grant by EPA.

The department continues to be supportive of current community monitoring projects, including the projects identified in the comment. One of the sensors in the Tetrad sensor network operated by KC Digital Drive and others in Kansas City is collocated with department FEM instruments at the Troost site. The department provides data from the FEM instruments at that site to the project, and department staff participate in periodic project conference calls.

Two of the sensors used in the Metropolitan Congregated United St. Louis Community-Based Air Quality Monitoring Program, Air Watch St. Louis, are located at department air monitoring sites. Calibration of those sensors is based in part on collocated monitoring with department FEM instruments by Washington University researchers at those sites during recent years.

Department staff were not aware of the Great Rivers ozone monitoring network in the Dutchtown neighborhood in St. Louis, but we are interested in seeing the results of the project and comparing them to department monitoring data. Similarly, we were not aware of the MCE

community-based air monitoring of hydrogen sulfide, ammonia, and particulate matter emissions, but we are interested in seeing the results of that project as well.

Corrections in Final Version of the 2022 Monitoring Network Plan

The department revised the section entitled “How to Make Public Comments Concerning this Plan” to indicate that it posted Revision 0 of the plan on May 24, 2022, received public comments on the plan through June 23, 2022, and has included comments and responses in Appendix 2 of this final version of the plan (Revision 1).

The department made corrections in Appendix 1 to indicate that the TEOM instruments at Hillcrest High School and St. Joseph Pump Station are 1405Fs, not 1405 DFs, and that the associated codes are the correct ones for those instruments.

The department added Appendix 2 (this appendix), which includes comments received, responses to comments, and identification of any corrections in the final version of the plan.

The department has made no other changes to the 2022 Monitoring Network Plan.